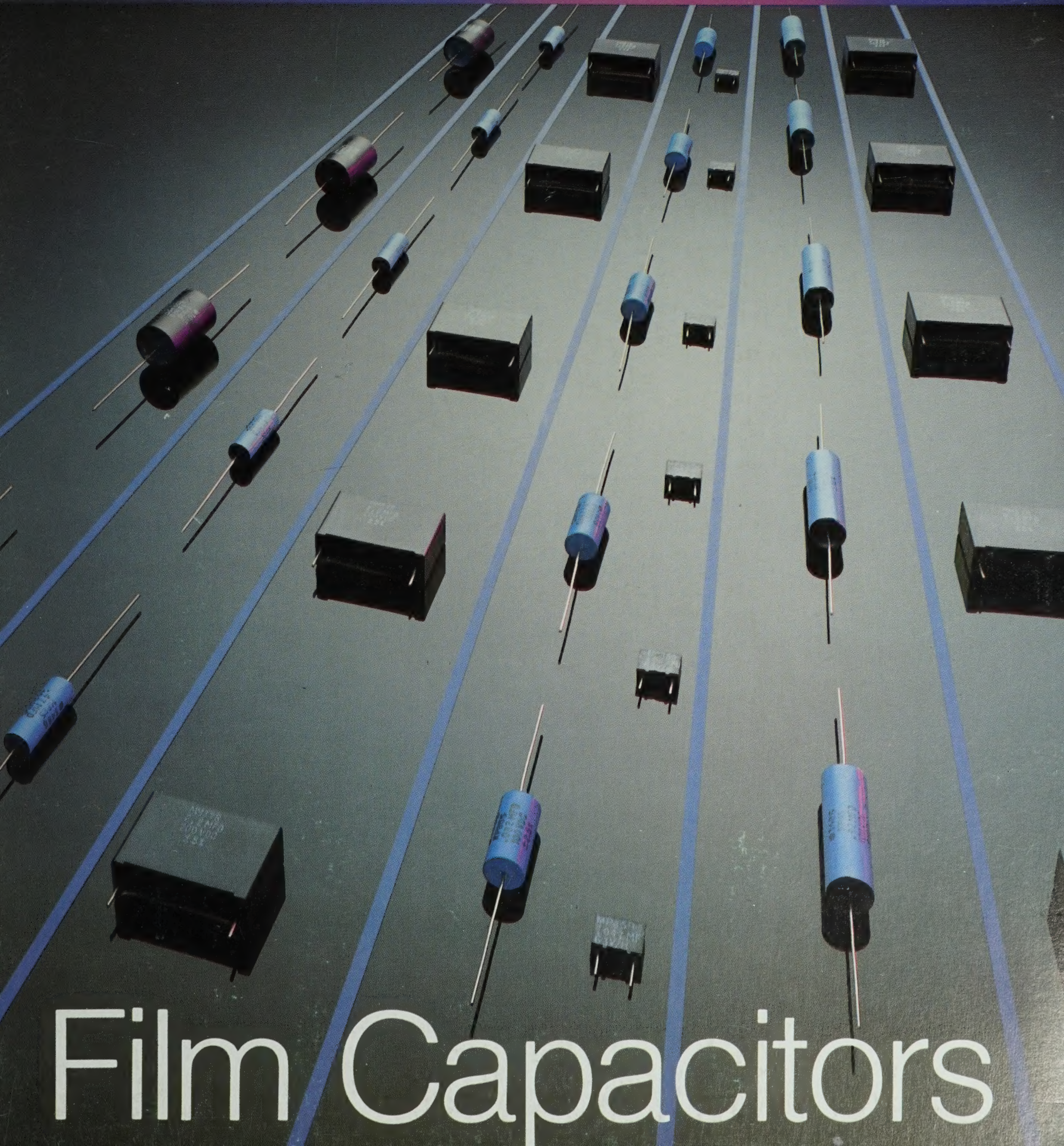
STK



Film Capacitors

INTRODUCTION

STK Electronics, Inc. is located in Cazenovia, New York and has been manufacturing film capacitors domestically since 1975. STK's business was founded and developed by providing the film capacitor market with axial leaded polypropylene capacitors with a major emphasis on close tolerance applications.

TODAY, servicing many OEM's in North America, STK continues to specialize in close tolerance and custom applications. Our product base has expanded to include a broad line of film dielectrics in both axial and radial leaded packaging. STK continues to boast the high quality product we were founded with, including a 100% final test prior to shipment.

This catalog was compiled to assist you in selecting the right film capacitor for your specific application. Please do not hesitate to contact us if additional information is required. You will find that along with our quality product, STK prides itself in courteous customer service.

STK Electronics is a member of The Trush Group.

STK HIGHLIGHTS

STK Electronics, Inc. has become a leader in custom manufacturing of film capacitors by channeling their efforts into providing the best in:

Dielectric Materials - STK offers film capacitors manufactured with all the major dielectrics. This wide selection of dielectric materials allows STK to supply the specific film capacitors that best suits your needs.

Precision Tolerances - With our sophisticated, state-of-the-art winding machines and complete domestic manufacturing facilities, STK offers 1% and 2% tolerances as standard product. Closer tolerances are available upon request.

Voltage Ranges - Our product families of film dielectrics offer voltage ranges from 50VDC through 600VDC. For higher voltage applications (1000VDC to 1500VDC) STK manufactures the SP84 and SP84S polypropylene series-wound capacitors.

Customized Manufacturing - The same sophisticated manufacturing system that produces our close tolerance capabilities also allows STK to easily modify our standard specifications to our customers specific needs. By offering this flexibility to our customers, STK has developed long-term business relationships with many major OEM's.

Typical modifications include:

> **Non-Standard Capacitance Values -** STK has the ability to manufacture any capacitance value from 100pf to 10mfd.
>
> **Size Reductions -** Capacitor size, lead lengths or other mechanical requirements you may specify are available.
>
> **Matched Pairs -** STK can provide matched pairs with capacitance tolerances to .1%.
>
> **Cut and Formed Leads -** STK will manufacture to your specifications upon request.
>
> **Special Electrical Designs -** STK will custom design to your specifications. For example - STK has developed a NPO hybrid film capacitor that is ultra stable in ambient temperatures with only ±50 ppm over the operating temperature range. If you have a special electrical design requirement, call STK.

Flame Retardant Capsule - Our axial leaded capacitors are offered in a "S" series for each dielectric. The "S" series features our flame retardant UL94VO capsule often necessary in many applications.

Engineering Services - The STK engineering department offers its many years of capacitor know how to help you solve your film capacitor problems.

Stocking Programs - We know how critical on-time deliveries are. STK offers effective stocking programs either through our many distributors or through the STK "in-house" stocking program. Contact our sales offices at 315/655-2530 for details.

Quality - Because STK produces only quality components, we have achieved "certified" status at many OEM's. Our on-going commitment to quality production assures that the final product is free of any defects or flaws and is manufactured to the precise tolerance required by our customers.

Table of Contents

Introduction and Highlights .... Inside Cover

Table of Contents 1

General Information 2

Dielectric Selection Guide 3

KP80S Polypropylene - Axial - Capsule 4, 5

KP80 Polypropylene - Axial - Wrap/Fill 6, 7

MP85S Metallized Polypropylene - Axial - Capsule 8, 9

MP85 Metallized Polypropylene - Axial - Wrap/Fill 10, 11

MP85R Metallized Polypropylene - Radial - Capsule 12, 13

SP84S Polypropylene - High Voltage - Axial - Capsule 14, 15

SP84 Polypropylene - High Voltage - Axial - Wrap/Fill 16, 17

PC22S Polycarbonate - Axial - Capsule 18, 19

PC22 Polycarbonate - Axial - Wrap/Fill 20, 21

MPC2S Metallized Polycarbonate - Axial - Capsule 22, 23

MPC2 Metallized Polycarbonate - Axial - Wrap / Fill 24, 25

MPC2R Metallized Polycarbonate - Radial - Capsule 26, 27

PS14S Polystyrene - Axial - Capsule 28, 29

PS14 Polystyrene - Axial - Wrap/Fill 30, 31

MM37 Metallized Polyester - Axial - Wrap/Fill 32, 33

MM37R Metallized Polyester - Radial - Capsule 34, 35

MM35R Metallized Polyester - Radial .2" L.S. - Capsule 36, 37

Tape and Reel Specification 38

Film Dielectric Comparisons 39, 40

Terms and Definitions 41, 42, 43, 44

General Information

The dielectric film and aluminum foil capacitors, as manufactured by STK Electronics, are a winding of two alternating strips of film and foil into a cylindrical unit. The foil extends beyond the dielectric, allowing the component leads to be welded to the foil, providing a construction with very low inductance and series resistance.

STK uses all four of the common plastic film dielectrics in its line of capacitors. These materials are polypropylene, polystyrene, polycarbonate and polyester (mylar). This listing is in the order of best electrical characteristics.

KP/MP/SP - Polypropylene dielectric has:

1. Linear, negative temperature coefficient suitable for compensation in resonant circuits.
2. High insulation resistance necessary for timing and sample and hold circuits.
3. Excellent pulse handling capability.
4. Extremely low dissipation factor.
5. Very little capacitance change with frequency making it useful at high frequencies.

PS - Polystyrene dielectric has:

1. Linear, negative temperature coefficient.
2. High insulation resistance.
3. Extremely low dissipation factor.
4. Very little capacitance change with frequency.

PC/MPC - Polycarbonate dielectric has:

1. Nearly linear positive temperature coefficient.
2. Widest application temperature range.
3. Good high temperature insulation resistance.

M/MM - Polyester dielectric has:

1. The best capacitance to volume ratio, allowing small size.
2. Economical.

STK Electronics also supplies polypropylene, polycarbonate, and polyester capacitors in metallized film construction. This construction has a very thin film of metal vacuum deposited on the surface of the dielectric to act as the plate in the capacitor. The elimination of the need for the foil allows for a volume reduction in the capacitor size. Metallized capacitors also have an added feature called self-healing. This occurs at the point where a defect in the dielectric material breaks down. In a film foil capacitor this would be a catastrophic failure, where as in a metallized capacitor there is only a slight loss in capacitance value. This occurs as the deposited metal vaporizes and/or oxidizes opening the current path (self-healing).

STK Electronics, Inc.
Rt. 20 East
PO Box 326
Cazenovia, NY 13035
Phone 315/655-2530
FAX 1-315-655-3862

Dielectric Selection Guide

DIELECTRIC	POLYPROPYLENE	HIGH VOLTAGE POLYPROPYLENE	METALLIZED POLYPROPYLENE	POLYCARBONATE	METALLIZED POLYCARBONATE	POLYSTYRENE	POLYESTER	METALLIZED POLYESTER
CAPACITANCE RANGE IN MFD	.0001 to .56	.001 to .018	.001 to 10.0	.0001 to .82	.0027 to 5.0	.0001 to .22	.001 to 1.0	.001 to 5.0
DC/VOLTAGES	50V to 600V	1000V to 1500V	100V to 600V	50V to 600V	100V to 600V	100V to 600V	50V to 600V	50V to 600V
STANDARD TOLERANCES	1% to 10%	1% to 10%	1% to 10%	1% to 10%	1% to 10%	1% to 10%	1% to 10%	1% to 10%
INSULATION RESISTANCE MEGOHM/MFD @ 25° C	200K Meg	200K Meg	100K Meg 45,000 sec	75K Meg	30K Meg 15,000 sec	200K Meg	50K Meg	25K Meg 10,000 sec
OPERATING RANGE °C	-40 +85 +105	-40 +85 +105	-40 +85 +105	-55 +125	-55 +125	-40 +70	-40 +105	-40 +105
DISSIPATION FACTOR (MAX.) % at 1000 Hz	.1	.1	.15	.3	.3	.1	.75	1.0
DIELECTRIC ABSORPTION %	.03	.03	.03	.1	.1	.02	.2	.2
BEST CHARACTERISTICS	Negative T.C. Stable Low Dissipation	High Voltage Pulse Handling	Negative T.C. Stable Low Dissipation	Positive T.C. Rated to 125° C	Positive T.C. Rated to 125° C	Very Stable	Low Cost	Small Size
STK SERIES NUMBER	KP80 KP80S	SP84 SP84S	MP85 MP85S MP85R	PC22 PC22S	MPC2 MPC2S MPC2R	PS14 PS14S	M33 M33S	MM37 MM35R MM37R

KP80S

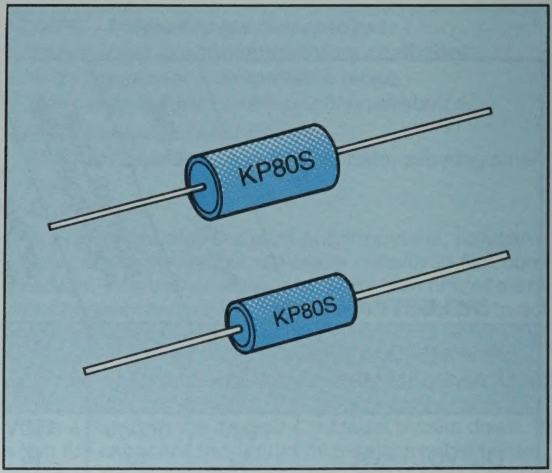
Polypropylene - Axial Encapsulated

INTRODUCTION:

The KP80S series capacitors are constructed with polypropylene film dielectric, aluminum foil and have a special flame retardant case with epoxy end sealed. This series is by far our most popular due to the uniform size and flame retardant capsule.

FEATURES:

- Flame retardant capsule meeting UL94VO
- Ideal for auto insertion
- Very good for pulse discharge
- High current handling capability
- Very low internal loss
- Can be rated up to 105°C
- Guaranteed to pass wash requirements



SPECIFICATIONS:

Dielectric - Polypropylene Film

Electrodes - Aluminum Foil

Leads - Copper Clad Steel

Encapsulation - Molded valox capsule with epoxy end fill

Lead Contact - Pigtail lead welded to extended foils

Packaging - Bulk pack, tape and reel upon request

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2.5%, ±2%, ±1%, ±0.5%. Special tolerances upon request.

Rated Voltages - 50 VDC/25 VAC
100 VDC/63 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 2.0X rated voltage for 1 min. Special test upon request.

Storage Temperature Range - -40°C through 105°C. 125°C upon request.

Lead Pull Test - 4.5# applied along axis of body.

Operating Temperature Range - -40°C through 85°C. 105°C available upon request.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 7°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 200K meg measured at 23°C ±3° and 100 VDC after 1 minute.

Temperature Coefficient - -150 ± 100 × 10^6/°C. Other TC's available.

Voltage Rise Time - 500V/micro sec.

Max. Current - 1 amp RMS, 2 amp max. peak.

Long Term Storage Capacitance Stability - 5 years at .2%.

Long Term Operational Capacitance Stability - 5 years at .5%.

Self-Inductance - Equal to or less than 20 nano henries.

Dissipation Factor - (Typical x 3 = maximum)

Frequency	4700pF thru .033μF	.033μF thru .1μF	.1μF thru .47μF
	.03%	.03%	.04%
10KHZ	.04%	.04%	X

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .03% maximum.

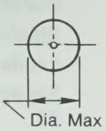
Dimensions

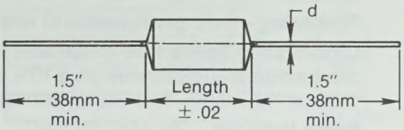
Capacitance (MFD)	Rated Voltage				
	50V	100V	200V	400V	600V
	Case Codes * (Dia. x Length)				
.0001				B x I	B x I
.001				B x I	B x I
.0015				B x I	B x I
.0022			B x I	B x I	B x I
.0033		B x I	B x I	B x I	B x J
.0047		B x I	B x I	B x J	D x J
.0056		B x I	B x I	B x J	D x M
.0068		B x I	B x I	B x J	D x M
.0082	A x H	B x I	B x I	D x J	D x M
.01	A x H	B x I	B x J	D x J	E x M
.012	A x H	B x J	B x J	D x M	E x M
.015	A x H	B x J	D x J	D x M	E x M
.018	B x I	B x J	D x J	D x M	E x M
.022	B x I	D x J	D x J	E x M	G x M
.027	B x I	D x J	D x M	G x M	G x M
.033	C x J	D x J	D x M	G x M	G x N
.039	C x J	D x M	E x M	G x N	J x N
.047	D x J	D x M	E x M	G x N	J x N
.056	D x M	D x M	E x M	G x N	
.068	D x M	D x M	E x M	J x N	
.082	D x M	E x M	G x M	J x N	
.1	D x M	E x M	G x N	J x N	
.12	E x M	G x N	G x N		
.15	G x M	G x N	J x N		
.18	G x N	G x N			
.22	G x N	J x N			
.27	J x N	J x N			
.33	J x N	L x N			
.39	J x N				
.47	L x N				
.56	L x N				

*Case Codes

Case Code	Dim. (in.)
A	.22
B	.25
C	.28
D	.32
E	.38
F	.40
G	.44
H	.48
I	.50
J	.56
K	.59
L	.63
M	.75
N	1.0

WIRE LEADS	
PART LENGTH	DIA. (d)
1.0″ ≤	.025″
1.0″ >	.032″





HOW TO ORDER

Example: KP80S 1323F100

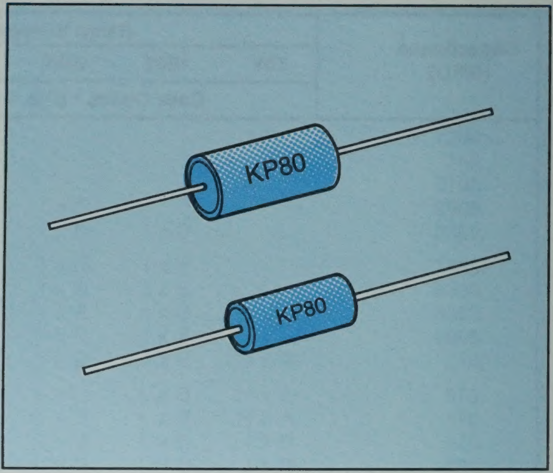
KP80S	**1323**	**F**	**100**
Polypropylene - Axial Encapsulated	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 50 100 200 400 600

KP80

Polypropylene - Axial Wrap and Fill

INTRODUCTION:

The KP80 series capacitors are constructed with polypropylene film dielectric and aluminum foil. The outer covering has a mylar wrap with epoxy end sealed.



FEATURES:

- Very good for pulse discharge
- High current handling capability
- Very low internal loss
- Can be rated up to 105°C
- Wrap and fill construction allows for smaller dimensions

SPECIFICATIONS:

Dielectric - Polypropylene Film

Electrodes - Aluminum Foil

Leads - Copper Clad Steel

Encapsulation - Polyester tape wrap with epoxy end fill

Lead Contact - Pigtail lead welded to extended foils

Packaging - Bulk pack, tape and reel upon request

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2.5%, ±2%, ±1%, ±0.5%. Special tolerances upon request.

Rated Voltages - 50 VDC/25 VAC
100 VDC/63 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 2.0X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body.

Storage Temperature Range - -40°C through 105°C. 125°C upon request.

Operating Temperature Range - -40°C through 85°C. 105°C available upon request.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 7°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 200K meg measured at 23°*C* ±3° and 100 VDC after 1 minute.

Temperature Coefficient - -150 ± 100 × 10^{6}/°C. Other TC's available.

Voltage Rise Time - 500V/micro sec.

Max. Current - 1 amp RMS, 2 amp max. peak.

Long Term Storage Capacitance Stability - 5 years at .2%.

Long Term Operational Capacitance Stability - 5 years at .5%.

Self-Inductance - Equal to or less than 20 nano henries.

Dissipation Factor - (Typical x 3 = maximum)

Frequency	**4700pF thru .033μF**	**.033μF thru .1μF**	**.1μF thru .47μF**
1KHZ	.03%	.03%	.04%
10KHZ	.04%	.04%	X

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .03% maximum.

Dimensions

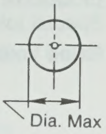
Capacitance (MFD)	Rated Voltage 50V	 100V	 200V	 400V	 600V
	Case Codes * (Dia. x Length)				
.0001				B x Q	B x Q
.001				B x Q	B x Q
.0015				B x Q	B x Q
.0022				C x Q	C x Q
.0033			B x Q	C x Q	D x Q
.0047			D x Q	D x Q	F x S
.0056		C x Q	D x Q	E x Q	G x S
.0068		C x Q	D x Q	E x S	H x S
.0082	A x Q	C x Q	E x S	F x S	E x W
.01	A x Q	D x Q	F x S	H x S	G x W
.012	A x Q	E x Q	G x S	I x S	H x W
.015	A x Q	F x S	H x S	H x W	G x X
.018	A x Q	F x S	I x S	I x W	H x X
.022	B x S	G x S	H x W	J x W	J x X
.027	C x S	H x S	J x W	K x W	K x X
.033	C x S	I x S	K x W	J x X	K x Y
.039	D x S	H x W	L x W	K x X	M x Y
.047	E x S	I x W	M x W	M x X	O x Y
.056	F x S	J x W	N x W	M x Y	O x Z
.068	E x W	K x W	L x X	N x Y	Q x Z
.082	E x W	H x X	M x X	P x Y	R x Z
.1	F x W	I x X	O x X	Q x Y	T x Z
.12	H x W	J x X	Q x X	Q x Z	
.15	J x W	L x X	Q x Y	S x Z	
.18	K x W	N x Y	R x Y	T x Z	
.22	L x X	Q x Y	S x Y	V x Z	
.27	M x X	R x Y	S x Z		
.33	O x X	R x Z	T x Z		
.39	P x X	S x Z			
.47	Q x Y	T x Z			
.56	R x Y	U x Z			

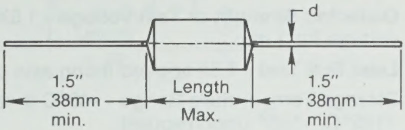
For larger values we suggest MP85 series

*Case Codes

Case Code	Dim. (in.)
A	.18
B	.20
C	.22
D	.24
E	.26
F	.28
G	.30
H	.32
I	.34
J	.36
K	.38
L	.40
M	.42
N	.44
O	.46
P	.49
Q	.51
R	.54
S	.59
T	.62
U	.66
V	.68
W	.71
X	.82
Y	.95
Z	1.05

WIRE LEADS	
PART LENGTH	DIA. (d)
1.0″ ≤	.025″
1.0″ >	.032″





HOW TO ORDER

Example: KP80 1323F100

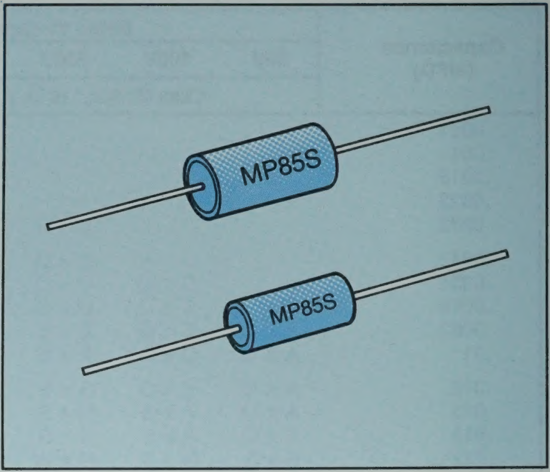
KP80	1323	F	100
Polypropylene - Axial Wrap and Fill	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 50 100 200 400 600

MP85S

Metallized Polypropylene Axial - Encapsulated

INTRODUCTION:

The MP85S series capacitors are constructed with a special metallized polypropylene film dielectric. This series takes advantage of the excellent properties of polypropylene with the additional advantage of reduced size. These capacitors have been designed for their outstanding environmental and electrical characteristics.



FEATURES:

- Flame retardant capsule meeting UL94VO
- Excellent stability over temperature range
- Excellent pulse handling capability
- Low internal power dissipation
- Self-healing properties
- Excellent dielectric absorption and insulation resistance properties
- Excellent for switching power supplies, blocking, and filter applications

SPECIFICATIONS:

Dielectric - Metallized Polypropylene Film

Leads - Copper Clad Steel

Encapsulation - Molded valox capsule with epoxy end fill.

Packaging - Bulk pack - tape and reel upon request.

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2%, ±1%. Special tolerances upon request.

Rated Voltages - 100 VDC/50 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 1.5X rated voltage for 1 min.

Lead Pull Test - 4.5# applied along axis of body.

Storage Temperature Range - -40°C through +105°C. +125° upon request.

Operating Temperature Range - -40°C through 85°C.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 3°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 100K meg measured at 23°C ±3° and 100 VDC after 1 minute. for values less than or equal to .5mf.

Time Constant - For values greater than .5mf the minimum value is 45,000 seconds.

Temperature Coefficient - $-300 \pm 100 \times 10^6/^\circ C$.

Voltage Rise Time - 50V/micro sec.

Max. Current - 1 amp RMS, 2 amp max. peak.

Long Term Storage Capacitance Stability - 5 years at .2%.

Long Term Operational Capacitance Stability - 5 years at .5%.

Self-Inductance - Equal to or less than 20 nano henries.

Dissipation Factor - (Typical x 3 = maximum)

Frequency	.01mf thru .1mf	.1mf thru .5mf	.5mf thru 3.3mf
1KHZ	.04%	.04%	.05%
10KHZ	.05%	.05%	X

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .03% maximum.

NOTE: STK can custom manufacture non-standard capacitance values and package designs from 100 pf to 10 mfd. Contact STK for details.

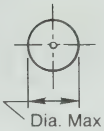
Dimensions

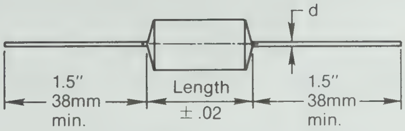
Capacitance (MFD)	Rated Voltage			
	100V	200V	400V	600V
	Case Codes* (Dia. x Length)			
.001				A x G
.0012				A x G
.0018				A x G
.0022				A x G
.0027				A x G
.0033			A x G	A x G
.0039			A x G	B x H
.0047			A x G	B x H
.0056			A x G	C x I
.0068			A x G	C x I
.0082			A x G	C x I
.01		A x G	A x G	C x I
.012		A x G	B x H	C x I
.015		A x G	B x H	D x I
.018		A x G	B x H	E x K
.022	A x G	B x H	B x H	E x K
.027	A x G	B x H	C x I	E x K
.033	A x G	B x H	D x I	E x K
.039	A x G	C x I	D x K	E x K
.047	A x G	C x I	D x K	F x K
.056	A x G	C x I	D x K	F x K
.068	A x G	D x I	E x K	F x L
.082	B x H	D x K	E x K	H x L
.1	B x H	D x K	E x K	I x L
.12	B x H	D x K	F x K	I x L
.15	C x I	E x K	H x K	
.18	D x I	E x K	F x L	
.22	D x I	F x K	F x L	
.27	E x K	F x L	H x L	
.33	E x K	F x L	I x L	
.39	E x K	F x L		
.47	E x K	F x L		
.56	E x K	H x L		
.68	E x K	I x L		

*Case Codes

Case Code	Dim. (in.)
A	.22
B	.25
C	.28
D	.32
E	.38
F	.44
G	.48
H	.51
I	.56
J	.59
K	.75
L	1.0

WIRE LEADS	
PART LENGTH	DIA. (d)
.90″ ≤	.025″
.90″ >	.032″





HOW TO ORDER

Example: MP85S 1323F100

MP85S	1323	F	100
Metallized Polypropylene Axial - Encapsulated	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 100 200 400 600

MP85

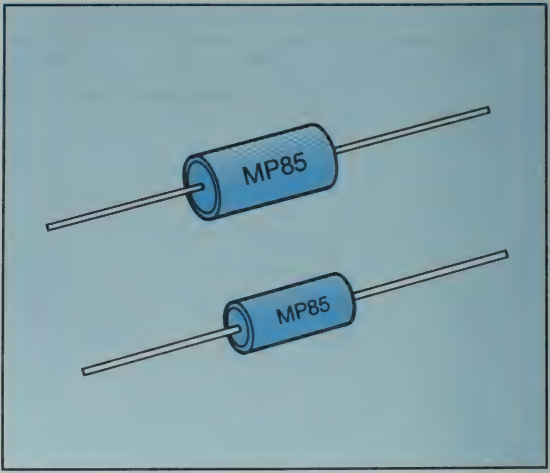
Metallized Polypropylene Axial - Wrap and Fill

INTRODUCTION:

The MP85 series capacitors features metallized polypropylene with a mylar wrap and epoxy end sealed. This series takes advantage of the excellent properties of polypropylene with the additional advantage of reduced size. These capacitors have been designed for their outstanding environmental and electrical characteristics.

FEATURES:

- Excellent stability over temperature range
- Excellent pulse handling capability
- Low internal power dissipation
- Self-healing properties
- Excellent dielectric absorption and insulation resistance properties
- Excellent for switching power supplies, blocking, and filter applications
- Available for tape and reel applications



SPECIFICATIONS:

Dielectric - Metallized Polypropylene Film

Leads - Copper Clad Steel

Encapsulation - Polyester tape wrap with epoxy end fill.

Packaging - Bulk pack - tape and reel upon request.

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2%, ±1%. Special tolerances upon request.

Rated Voltages - 100 VDC/50 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 1.5X rated voltage for 1 min.

Lead Pull Test - 4.5# applied along axis of body.

Storage Temperature Range - -40°C through 105°C. 125° upon request.

Operating Temperature Range - -40°C through 85°C.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 3°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 100K meg measured at 23°C ±3° and 100 VDC after 1 minute. For values less than or equal to .5mf.

Time Constant - For values greater than .5mf the minimum value is 45,000 seconds.

Temperature Coefficient - -300 ±100 × 10^{6}/°C.

Voltage Rise Time - 50V/micro sec.

Max. Current - 1 amp RMS, 2 amp max. peak.

Long Term Storage Capacitance Stability - 5 years at .2%.

Long Term Operational Capacitance Stability - 5 years at .5%.

Self-Inductance - Equal to or less than 20 nano henries.

Dissipation Factor - (Typical x 3 = maximum)

Frequency	.01mf thru .1mf	.1mf thru .5mf	.5mf thru 3.3mf
1KHZ	.04%	.04%	.05%
10KHZ	.05%	.05%	X

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .03% maximum.

NOTE: STK can custom manufacture non-standard capacitance values and package designs from 100 pf to 10 mfd. Contact STK for details.

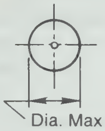
Dimensions

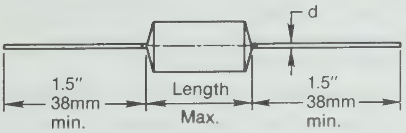
Capacitance (MFD)	Rated Voltage 100V	200V	400V	600V
	Case Codes* (Dia. x Length)			
.001			A x M	A x M
.0015			A x M	A x M
.0022			A x M	A x Q
.0027			A x M	A x Q
.0033			A x M	A x Q
.0039			A x N	B x Q
.0047			A x Q	B x Q
.0056			A x Q	D x Q
.0068			A x Q	D x Q
.0082			B x Q	E x Q
.01			B x Q	C x S
.012			B x Q	D x S
.015			B x S	F x S
.018		A x Q	B x S	G x S
.022		B x Q	C x S	E x U
.027		B x Q	D x S	F x U
.033		B x S	E x S	G x U
.039		C x S	C x U	H x U
.047		C x S	D x U	J x U
.056		D x S	E x U	K x U
.068	B x Q	F x S	G x U	M x U
.082	C x Q	D x U	G x U	L x V
.10	D x Q	E x U	I x U	N x V
.12	C x S	F x U	J x U	Q x V
.15	D x S	H x U	M x U	P x W
.18	G x S	H x U	J x V	Q x W
.22	G x S	J x U	L x V	R x W
.27	H x S	G x V	N x V	
.33	F x U	I x V	R x V	
.47	H x U	L x V	R x X	
.56	I x U	N x V	S x X	
.68	J x U	Q x V	S x Y	
.82	L x U	N x W	T x Y	
1.0	L x V	Q x W	T x Y	
2.0	Q x V	Q x X		
3.0	Q x W	S x Y		
4.0	R x X	T x Y		
5.0	R x Y	U x Y		
10.0	U x Y	V x Z		

*Case Codes

Case Code	Dim. (in.)
A	.17
B	.20
C	.22
D	.24
E	.26
F	.28
G	.30
H	.32
I	.34
J	.37
K	.39
L	.41
M	.43
N	.46
O	.49
P	.50
Q	.52
R	.56
S	.59
T	.69
U	.85
V	1.10
W	1.38
X	1.70
Y	1.93
Z	2.25

WIRE LEADS	
PART LENGTH	DIA. (d)
.90″ ≤	.025″
.90″ >	.032″





HOW TO ORDER

Example: MP85 1323F100

MP85	1323	F	100
Metallized Polypropylene Axial - Wrap and Fill	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 100 200 400 600

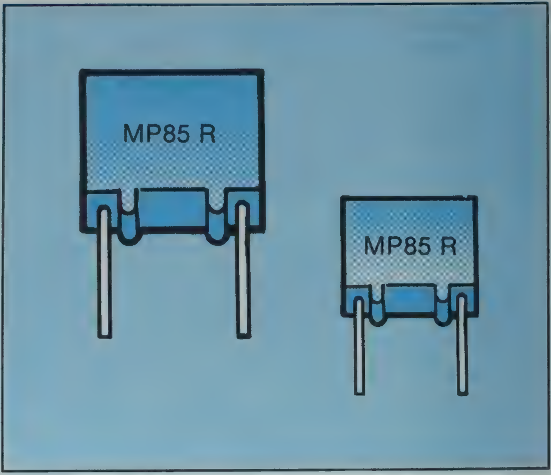
STK

MP85R

Metallized Polypropylene
Radial Lead

INTRODUCTION:

The MP85R series capacitors are constructed with a special metallized polypropylene film dielectric. This series takes advantage of the excellent properties of polypropylene with the additional advantage of reduced size. These capacitors have been designed for their outstanding environmental and electrical characteristics.



FEATURES:

- Flame retardant capsule meeting UL94VO
- Excellent stability over temperature range
- Excellent pulse handling capability
- Low internal power dissipation
- Self-healing properties
- Excellent dielectric absorption and insulation resistance properties
- Excellent for switching power supplies, blocking, and filter applications

SPECIFICATIONS:

Dielectric - Metallized Polypropylene Film

Leads - Copper Clad Steel

Encapsulation - Molded valox capsule with epoxy end fill.

Packaging - Bulk pack - tape and reel upon request.

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2%, ±1%. Special tolerances upon request.

Rated Voltages - 100 VDC/50 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 1.5X rated voltage for 1 min.

Lead Pull Test - 4.5# applied along axis of body.

Storage Temperature Range - -40°C through +105°C. +125° upon request.

Operating Temperature Range - -40°C through 85°C.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 3°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 100K meg measured at 23°C ±3° and 100 VDC after 1 minute. For values less than or equal to .5mf.

Time Constant - For values greater than .5mf the minimum value is 45,000 seconds.

Temperature Coefficient - $-300 \pm 100 \times 10^{6}/°C$.

Voltage Rise Time - 50V/micro sec.

Max. Current - 1 amp RMS, 2 amp max. peak.

Long Term Storage Capacitance Stability - 5 years at .2%.

Long Term Operational Capacitance Stability - 5 years at .5%.

Self-Inductance - Equal to or less than 20 nano henries.

Dissipation Factor - (Typical x 3 = maximum)

Frequency	.01mf thru .1mf	.1mf thru .5mf	.5mf thru 3.3mf
1KHZ	.04%	.04%	.05%
10KHZ	.05%	.05%	X

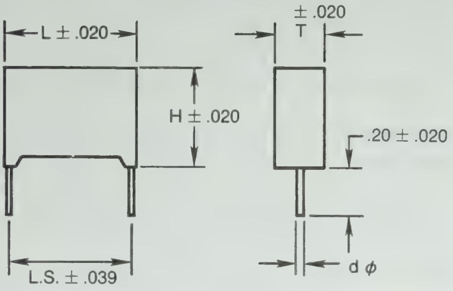
Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .03% maximum.

NOTE: STK can custom manufacture non-standard capacitance values and package designs from 100 pf to 10 mfd. Contact STK for details.

Dimensions

Capacitance (MFD)	Rated Voltage 100V	 200V	 400V	 600V
	Case Codes*(Dia. x Length)			
.001				B/C
.0012				B/C
.0015				B/C
.0018				B/C
.0022				B/C
.0033				B/C
.0039				B/C
.0047				B/C
.0056			B	B/C
.0068			B	C
.0082			B	C
.01			C	C
.012		B	C	D
.015		B	C	D
.018		B	C	E
.022	B	B/C	D	E
.027	B	C	D	F
.033	B	C	D	F
.039	B	C	E	G
.047	B/C	D	E	G
.056	C	D	F	H
.068	C	E	F	I
.082	C	F	G	I
.1	D	F	H	M
.12	D	F	H	M
.15	E	G	I	N
.18	F	H	M	N
.22	F	H	M	O
.33	G	I	N	P
.39	G	L	N	P
.47	H	M	O	Q
.56	H	M	P	Q
.68	L	N	P	R
.82	M	O	P	R
1.0	N	O	Q	R
1.5	O	P	R	S
2.2	P	Q	R	S
3.9	Q	R	S	
4.7	R	S		

CASE CODE	L	T	H	L.S.	d
B	.418	.162	.359	.300	.024
C	.517	.162	.359	.400	.024
D	.517	.202	.438	.400	.024
E	.517	.241	.477	.400	.024
F	.714	.202	.438	.600	.024
G	.714	.241	.477	.600	.024
H	.714	.300	.536	.600	.024
I	.714	.340	.576	.600	.024
L	1.048	.241	.596	.900	.031
M	1.048	.281	.635	.900	.031
N	1.048	.340	.674	.900	.031
O	1.048	.399	733	.900	.031
P	1.265	.438	.792	1.100	.031
Q	1.265	.517	.871	1.100	031
R	1.265	.596	1.186	1.100	.031
S	1.265	.714	1.304	1.100	031



HOW TO ORDER

Example: MP85R 1323F100

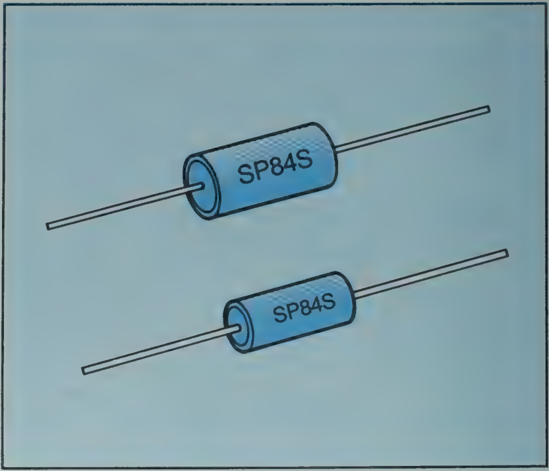
MP85R	1323	F	100
Metallized Polypropylene	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 100 200 400 600

SP84S

Polypropylene - Axial
High Voltage - Encapsulated

INTRODUCTION:

The SP84S series capacitors are constructed with polypropylene film and aluminum foil. They are wound with a series construction to obtain the voltage rating and are encapsulated in flame retardant capsule.



FEATURES:

- Applications include:
  Scan circuits
  Pulse forming circuits
  R-F generators
- Designed for high voltage pulse applications
- Capable of high discharge current
- Very low ESR
- Very low internal dissipation

Flame retardant capsule meeting UL94VO

SPECIFICATIONS:

Dielectric - Polypropylene Film

Electrodes - Aluminum Foil

Leads - Copper Clad Steel

Encapsulation - Molded valox capsule with epoxy end fill

Lead Contact - Pigtail lead welded to extended foils

Packaging - Bulk pack, tape and reel upon request

Capacitance Tolerances - Available from standard production are of; ±10%, ±5%, ±2.5%, ±2%, ±1%, ±0.5%. Special tolerances upon request.

Rated Voltages - 1000 VDC/400 VAC/1000V
(Peak Pulse + DC Voltage = Total)
1500 VDC/500 VAC/1500V
(Peak Pulse + DC Voltage = Total)

Dielectric Strength or Test Voltage - 1.5X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body.

Operating Temperature Range - -40°C through 85°C, 105°C available upon request.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 7°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 200K meg measured at 23°C ±3° and 100 VDC after 1 minute.

Temperature Coefficient - -150 ±100 × 10^6/°C. Other TC's available.

Voltage Rise Time - 1000V/micro sec

Maximum Current - 2 amp RMS, 4 amp max peak

Long Term Storage Capacitance Stability - 2 years at .2%

Long Term Operational Capacitance Stability - 2 years at .5%

Self-Inductance - Equal to or less than 20 nano henries

Dissipation Factor - (Typical x 3 = maximum)

Frequency	**Any Value**
1 KHZ	.03%
10 KHZ	.05%

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .03% maximum.

Dimensions

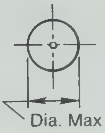
Capacitance (MFD)	Rated Voltage 1000V	Rated Voltage 1500V
	Case Codes* (Dia. x Length)	
.001		B x G
.0012		B x G
.0015		C x H
.0018	A x G	C x H
.0022	A x G	C x H
.0027	A x G	D x H
.0033	B x G	D x H
.0039	B x G	E x H
.0047	C x H	E x H
.0056	C x H	E x H
.0068	D x H	E x H
.0082	D x H	F x H
.01	E x H	
.012	E x H	
.015	F x H	

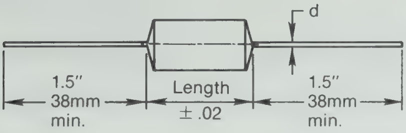
2000V available upon request.

*Case Codes

Case Code	Dim. (in.)
A	.32
B	.38
C	.40
D	.44
E	.56
F	.63
G	.75
H	1.0

WIRE LEADS	
PART LENGTH	DIA. (d)
1.0″ ≤	.025″
1.0″ >	.032″





HOW TO ORDER

Example: SP84S 562F1000

SP84S	562	F	1000
Polypropylene - Axial High Voltage - Encapsulated	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 5600pfd or .0056mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 1000 1500 2000

SP84

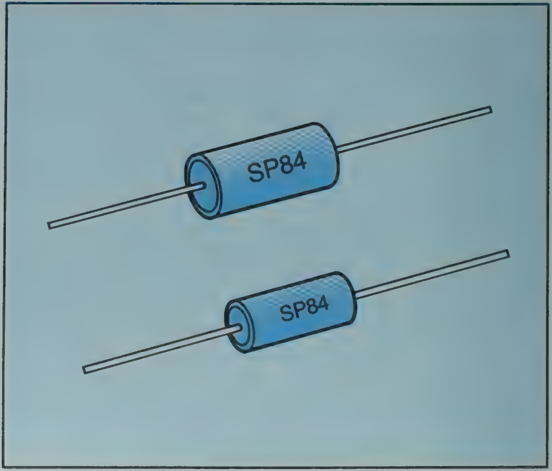
Polypropylene - Axial
High Voltage - Wrap and Fill

INTRODUCTION:

The SP84 series capacitors are constructed with polypropylene film and aluminum foil. They are wound with a series construction to obtain the voltage rating.

FEATURES:

- Applications include:
  Scan circuits
  Pulse forming circuits
  R-F generators
- Designed for high voltage pulse applications
- Capable of high discharge current
- Very low ESR
- Very low internal dissipation



SPECIFICATIONS:

Dielectric - Polypropylene Film

Electrodes - Aluminum Foil

Leads - Copper Clad Steel

Encapsulation - Mylar tape with epoxy end fill

Lead Contact - Pigtail lead welded to extended foils

Packaging - Bulk pack, tape and reel upon request

Capacitance Tolerances - Available from standard production are of; ±10%, ±5%, ±2.5%, ±1%, ±.05%. Special tolerances upon request.

Rated Voltages - 1000 VDC/400 VAC/1000V
(Peak Pulse + DC Voltage = Total)
1500 VDC/500 VAC/1500V
(Peak Pulse + DC Voltage = Total)

Dielectric Strength or Test Voltage - 1.5X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body.

Operating Temperature Range - -40°C through 85°C, 105°C available upon request.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 7°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 100K meg measured at 23°C ±3° and 100 VDC after 1 minute.

Temperature Coefficient - -150 ±100 × 10^6/°C. Other TC's available.

Voltage Rise Time - 1000V/micro sec

Maximum Current - 2 amp RMS, 4 amp max peak

Long Term Storage Capacitance Stability - 2 years at .2%

Long Term Operational Capacitance Stability - 2 years at .5%

Self-Inductance - Equal to or less than 20 nano henries

Dissipation Factor - (Typical x 3 = maximum)

Frequency	Any Value
1 KHZ	.03%
10 KHZ	.05%

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .03% maximum.

Dimensions

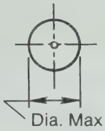
Capacitance (MFD)	Rated Voltage 1000V	Rated Voltage 1500V	Rated Voltage 2000V
	Case Codes* (Dia. x Length)		
.001		C x M	C x N
.0012		D x M	D x N
.0015		E x M	E x N
.0018	D x L	B x N	D x O
.0022	E x L	D x N	E x O
.0027	B x M	E x N	G x O
.0033	C x M	F x N	H x O
.0039	D x M	G x N	I x O
.0047	D x N	G x O	G x P
.0056	E x N	H x O	H x P
.0068	F x N	I x O	I x P
.0082	G x N	J x O	
.01	G x O	I x P	
.012	H x O	J x P	
.015	I x O	I x Q	
.018	K x O		

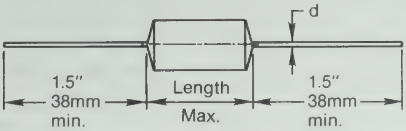
2000V available upon request.

*Case Codes

Case Code	Dim. (in.)
A	.25
B	.28
C	.30
D	.33
E	.35
F	.38
G	.42
H	.46
I	.51
J	.54
K	.57
L	.71
M	.83
N	.95
O	1.10
P	1.35
Q	1.60

WIRE LEADS	
PART LENGTH	DIA. (d)
1.0″ ≤	.025″
1.0″ >	.032″





HOW TO ORDER

Example: SP84 562F1000

SP84	562	F	1000
Polypropylene - Axial **High Voltage - Wrap and Fill**	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 5600pfd or .0056mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 1000 1500 2000

PC22S

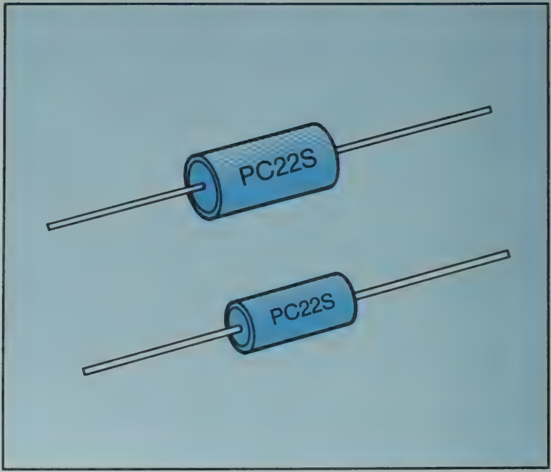
Polycarbonate - Axial Encapsulated

INTRODUCTION:

The PC22S series capacitors are constructed with polycarbonate film and aluminum foil. This series is packaged in a unique flame retardant capsule with epoxy end seals. The polycarbonate dielectric offers the extended temperature range capabilities.

FEATURES:

- Operational from -55°C to +125°C
- Offers a nearly linear positive temperature coefficient
- Flame retardant capsule meeting UL 94VO
- Excellent long term stability



SPECIFICATIONS:

Dielectric - Polycarbonate Film

Electrodes - Aluminum Foil

Leads - Copper Clad Steel

Encapsulation - Molded valox capsule with epoxy end fill.

Packaging - Bulk pack - tape and reel upon request.

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2%, ±1%, ±0.5%. Special tolerances upon request.

Rated Voltages - 50 VDC/25 VAC
100 VDC/50 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 2.0X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body.

Storage Temperature Range - 125°C

Operating Temperature Range - -55°C through +125°C.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 7°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 75K meg measured at 23°C ±3° and 100 VDC after 1 minute.

Temperature Coefficient - +150 ±100 × 10^6/°C.

Voltage Rise Time - 500V/micro sec.

Max. Current - 1 amp RMS, 2 amp max. peak.

Long Term Storage Capacitance Stability - 5 years at .2%.

Long Term Operational Capacitance Stability - 5 years at .5%.

Self-Inductance - Equal to or less than 20 nano henries.

Dissipation Factor - (Typical x 3 = maximum)

Frequency	4700pf thru .033mf	.033mf thru .1mf	.1mf thru .47mf
1 KHZ	.07%	.08%	.1%

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .1% maximum.

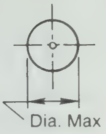
Dimensions

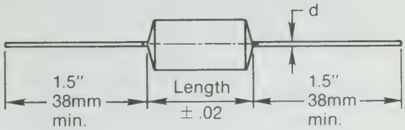
Capacitance (MFD)	Rated Voltage				
	50V	100V	200V	400V	600V
	Case Codes* (Dia. x Length)				
.0001				B x H	B x H
.001				B x H	B x H
.0015				B x H	B x H
.0022				B x H	B x H
.0027				B x H	B x I
.0033				B x H	B x I
.0039				B x H	B x I
.0047				B x H	D x I
.0056				B x H	D x I
.0068				B x I	D x I
.0082			A x G	D x I	D x K
.01		A x G	B x H	D x I	D x K
.012		A x G	B x H	D x I	F x K
.015		A x G	B x I	D x K	F x K
.018		B x H	C x I	D x K	F x K
.022	A x G	B x H	D x I	E x K	F x K
.027	B x H	C x I	D x K	E x K	F x L
.033	B x H	C x I	D x K	F x K	F x L
.039	B x H	C x I	D x K	F x K	F x L
.047	B x I	D x I	E x K	F x L	I x L
.056	D x I	D x K	E x K	F x L	I x L
.068	D x I	D x K	F x K	F x L	
.082	D x K	D x K	F x K	I x L	
.10	D x K	E x K	F x L	I x L	
.12	D x K	E x K	F x L		
.15	E x K	F x K	F x L		
.18	E x K	F x K	I x L		
.22	F x K	F x K	I x L		
.27	F x K	F x L			
.33	F x L	I x L			
.39	F x L				
.47	F x L				
.56	I x L				

*Case Codes

Case Code	Dim. (in.)
A	.22
B	.25
C	.28
D	.32
E	.38
F	.44
G	.48
H	.51
I	.56
J	.59
K	.75
L	1.0

WIRE LEADS	
PART LENGTH	DIA. (d)
1.0″ ≤	.025″
1.0″ >	.032″





HOW TO ORDER

Example: PC22S 1323F100

PC22S	1323	F	100
Polycarbonate - Axial Encapsulated	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 50 100 200 400 600

PC22

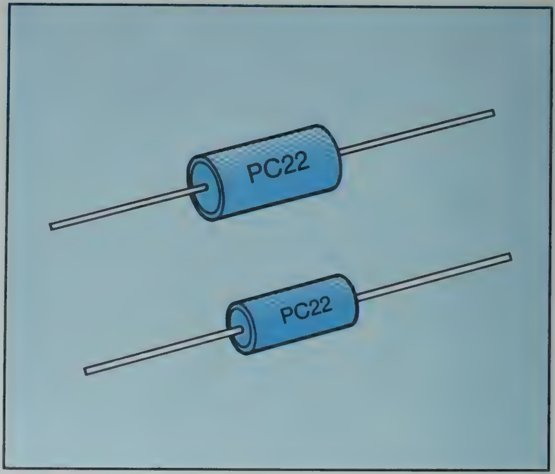
Polycarbonate - Axial Wrap and Fill

INTRODUCTION:

The PC22 series capacitors are constructed with polycarbonate film and aluminum foil with mylar wrap and epoxy end sealed. The polycarbonate dielectric offers the extended temperature range capabilities.

FEATURES:

- Operational from -55°C to +125°C
- Offers a nearly linear positive temperature coefficient
- Excellent long term stability
- Available on tape and reel for auto-insertion



SPECIFICATIONS:

Dielectric - Polycarbonate Film

Electrodes - Aluminum Foil

Leads - Copper Clad Steel

Encapsulation - Polyester tape wrap with epoxy end fill.

Packaging - Bulk pack - tape and reel upon request.

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2%, ±1%, ±0.5%. Special tolerances upon request.

Rated Voltages - 50 VDC/25 VAC
100 VDC/50 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 2.0X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body.

Storage Temperature Range - -55°C through +125°

Operating Temperature Range - -55°C through 125°C.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 7°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 75K meg measured at 23°*C* ±3° and 100 VDC after 1 minute.

Temperature Coefficient - +150 ±100 × 10^{6}/°C.

Voltage Rise Time - 500V/micro sec.

Max. Current - 1 amp RMS, 2 amp max. peak.

Long Term Storage Capacitance Stability - 5 years at .2%.

Long Term Operational Capacitance Stability - 5 years at .5%.

Self-Inductance - Equal to or less than 20 nano henries.

Dissipation Factor - (Typical x 3 = maximum)

Frequency	4700pf thru .033mf	.033mf thru .1mf	.1mf thru .47mf
1 KHZ	.07%	.08%	.1%

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .1% maximum.

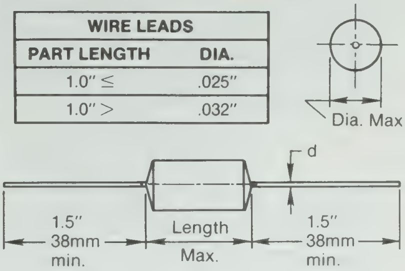
Dimensions

Capacitance (MFD)	Rated Voltage				
	50V	100V	200V	400V	600V
	Case Codes* (Dia. x Length)				
.0001				B x T	B x T
.001				B x T	C x T
.0015				C x T	C x T
.0022				D x T	D x T
.0033				D x T	C x U
.0047				D x T	D x U
.0056				D x T	E x U
.0068				D x U	H x U
.0082			B x T	D x U	F x V
.01		A x T	B x T	E x U	H x V
.012		A x T	C x T	G x U	I x V
.015		A x T	D x U	F x V	K x V
.018		B x T	E x U	H x V	M x V
.022	A x T	C x T	F x U	I x V	Q x V
.027	B x T	D x T	E x V	K x V	M x W
.033	C x T	E x T	F x V	N x V	L x X
.039	D x T	E x U	G x V	Q x V	M x X
.047	D x U	G x U	I x V	M x W	Q x X
.056	F x U	E x V	J x V	P x W	
.068	H x U	F x V	L x V	O x X	
.082	E x V	H x V	P x V	R x X	
.10	G x V	I x V	M x W	S x X	
.12	H x V	J x V	Q x W		
.15	I x V	J x W	Q x X		
.18	K x V	K x W	R x X		
.22	O x V	O x W	S x X		
.27	R x V	N x X			
.33	R x W	Q x X			
.39	S x W	R x X			
.47	R x X	S x X			
.56	S x X	T x X			
.68	T x X				
.82	U x X				

*Case Codes

Case Code	Dim. (in.)
A	.17
B	.19
C	.20
D	.22
E	.24
F	.25
G	.26
H	.28
I	.30
J	.31
K	.33
L	.34
M	.35
N	.36
O	.37
P	.38
Q	.40
R	.42
S	.46
T	.51
U	.59
V	.71
W	.82
X	.95

WIRE LEADS	
PART LENGTH	DIA.
1.0″ ≤	.025″
1.0″ >	.032″



HOW TO ORDER

Example: PC22 1323F100

PC22	1323	F	100
Polycarbonate - Axial Wrap and Fill	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 50 100 200 400 600

MPC2S

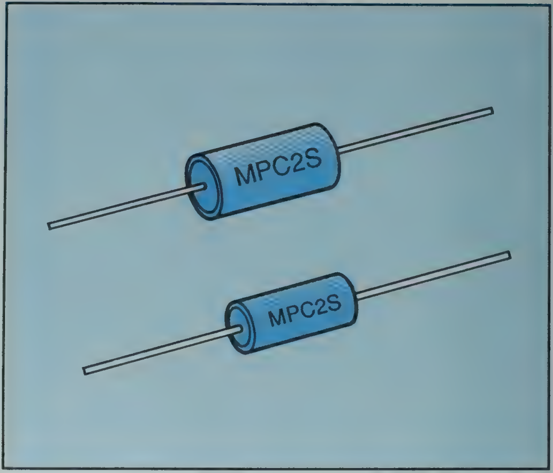
Metallized Polycarbonate
Axial - Encapsulated

INTRODUCTION:

The MPC2S series features metallized polycarbonate in a flame retardant axial leaded package. Ideal for the following applications: blocking, coupling, decoupling, D.C. filter and other applications needing high stability.

FEATURES:

- Positive temperature coefficient
- Self-healing characteristics
- Excellent reliability
- Good moisture resistance
- Excellent long term stability
- Excellent temperature stability
- Flame retardant capsule meeting UL94VO.



SPECIFICATIONS:

Dielectric - Metallized Polycarbonate

Leads - Copper Clad Steel

Encapsulation - Molded valox capsule with epoxy end fill

Lead Contact - Pigtail lead welded to end spray

Packaging - Bulk pack, tape and reel upon request

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2%, ±1%, ±0.5%. Special tolerances upon request.

Rated Voltages - 100 VDC/50 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 1.5X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body.

Storage Temperature - -55°C through +125°C

Operating Temperature Range - -55°C through +125°C.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 7°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 50K meg measured at 23°C ±3° and 100 VDC after 1 minute, for values less than or equal to .5μf.

Time Constant - For values greater than .5μf the minimum value is 25,000 seconds.

Temperature Coefficient - +150 ±100 × 10^6/°C.

Voltage Rise Time - 5V/micro sec

Maximum Current - .5 amp RMS, 1 amp max peak

Long Term Storage Capacitance Stability - 5 years at 1%

Long Term Operational Capacitance Stability - 5 years at 2%

Self-Inductance - Equal to or less than 20 nano henries

Dissipation Factor - (Typical x 3 = maximum)

Frequency	1000pf thru 1.0mf	1mf thru 4.7mf
1KHZ	.1%	.15%

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .1% maximum.

NOTE: STK can custom manufacture non-standard capacitance values and package designs from 100 pf to 10 mfd. Contact STK for details.

STK

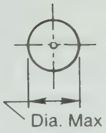
Dimensions

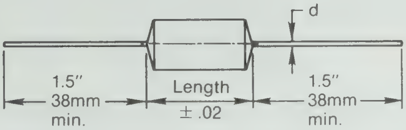
Capacitance (MFD)	Rated Voltage 100V	 200V	 400V	 600V
	Case Codes* (Dia. x Length)			
.001				A x H
.0027			A x H	A x H
.0033			A x H	B x I
.0039			A x H	C x J
.0047			A x H	C x J
.0068		A x H	B x I	D x J
.0082		A x H	D x R	G x M
.01	A x H	A x H	D x R	H x M
.012	A x H	B x I	D x J	G x M
.015	A x H	B x I	D x J	G x M
.018	A x H	B x I	D x M	G x M
.022	A x H	B x I	D x M	G x M
.027	B x I	B x I	D x M	G x M
.033	B x I	B x I	G x M	G x O
.039	B x I	B x I	G x M	G x O
.047	B x I	B x I	G x M	J x O
.056	B x I	C x J	G x M	J x O
.068	B x I	D x J	G x O	J x O
.082	B x I	D x J	G x O	J x O
.1	C x J	D x M	J x O	J x O
.12	C x J	D x M	J x O	
.15	C x J	F x M	J x O	
.18	C x J	F x M	J x O	
.22	D x J	G x M	J x O	
.27	D x M	G x M	J x O	
.33	F x M	G x O		
.39	F x M	G x O		
.47	F x M	G x O		
.56	G x M	J x O		
.68	G x M	J x O		
.82	G x O	J x O		
1.0	G x O			
1.2	J x O			
1.5	J x O			

*Case Codes

Case Code	Dim. (in.)
A	.22
B	.25
C	.28
D	.32
F	.38
G	.44
H	.48
I	.51
J	.56
K	.59
L	.63
M	.75
O	1.0

WIRE LEADS	
PART LENGTH	DIA. (d)
.90″ ≤	.025″
.90″ >	.032″





Example: MPC2S 1323F100

MPC2S	**1323**	**F**	**100**
Metallized Polycarbonate Axial - Encapsulated	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 100 200 400 600

MPC2

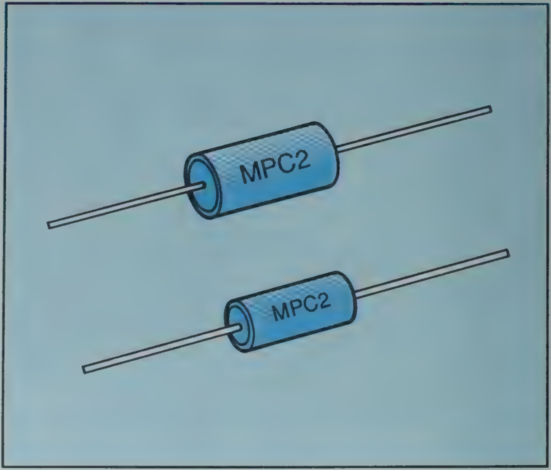
Metallized Polycarbonate
Axial - Wrap and Fill

INTRODUCTION:

The MPC2 series features metallized polycarbonate in a wrap and fill axial leaded construction. Ideal for blocking, coupling, decoupling, D.C. filters and applications needing high stability.

FEATURES:

- Positive temperature coefficient
- Self-healing characteristics
- Excellent reliability
- Good moisture resistance
- Excellent long term stability
- Excellent temperature stability
- Space saving dimensions



SPECIFICATIONS:

Dielectric - Metallized Polycarbonate

Leads - Copper Clad Steel

Encapsulation - Polyester tape wrap with epoxy end fill

Lead Contact - Pigtail lead welded to end spray

Packaging - Bulk pack, tape and reel upon request

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2%, ±1%, ±0.5%. Special tolerances upon request.

Rated Voltages - 100 VDC/50 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600VDC/200 VAC

Dielectric Strength or Test Voltage - 1.5X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body.

Storage Temperature - -40°C through 125°C

Operating Temperature Range - -55°C through 125°C.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 7°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 50K meg measured at 23°C ±3° and 100 VDC after 1 minute for values less than or equal to .5μf.

Time Constant - For values greater than .5μf the minimum value is 25,000 seconds.

Temperature Coefficient - +150 ±100 × 10^6/°C.

Voltage Rise Time - 5V/micro sec

Maximum Current - .5 amp RMS, 1 amp max. peak

Long Term Storage Capacitance Stability - 5 years at 1%

Long Term Operational Capacitance Stability - 5 years at 2%

Self-Inductance - Equal to or less than 20 nano henries

Dissipation Factor - (Typical x 3 = maximum)

Frequency	1000pf thru 1.0mf	1mf thru 4.7mf
1KHZ	.1%	.15%

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .1% maximum.

NOTE: STK can custom manufacture non-standard capacitance values and package designs from 100 pf to 10 mfd. Contact STK for details.

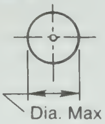
Dimensions

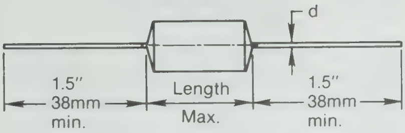
Capacitance (MFD)	Rated Voltage 100V	 200V	 400V	 600V
	Case Codes* (Dia. x Length)			
.001				A x R
.0027			A x P	A x R
.0033			A x P	B x R
.0039			A x P	C x R
.0047			A x P	D x R
.0068		A x M	C x R	F x R
.0082		A x M	D x R	G x R
.01	A x M	A x M	D x R	H x R
.012	A x M	B x M	E x R	I x R
.015	A x M	B x M	F x R	J x R
.018	A x M	B x M	G x R	K x R
.022	A x M	C x M	H x R	J x S
.027	B x M	A x R	I x R	K x S
.033	B x M	B x R	J x R	K x T
.047	B x M	D x R	M x R	M x T
.056	A x R	E x R	I x T	O x T
.068	B x R	F x R	K x T	P x T
.082	C x R	G x R	L x T	R x U
.1	D x R	E x S	M x T	Q x U
.12	E x R	F x S	L x U	R x W
.15	F x R	H x S	O x U	R x W
.18	D x R	I x S	P x U	S x W
.22	E x R	K x S	R x U	S x W
.27	F x S	I x U	R x V	S x Y
.33	G x S	J x U	R x V	S x Y
.47	F x T	M x U	R x X	S x Y
.56	H x T	O x U	S x X	T x Y
.68	I x T	N x V	S x Y	
.82	K x T	P x V	S x Y	
1.0	L x U	Q x W	S x Y	
2.0	M x W	S x W	U x Z	
3.0	Q x W	S x Y	V x Z	
4.0	S x X	S x Y		
5.0	S x X	S x Z		

*Case Codes

Case Code	Dim. (in.)
A	.18
B	.20
C	.22
D	.24
E	.26
F	.28
G	.30
H	.32
I	.34
J	.36
K	.38
L	.40
M	.42
N	.44
O	.46
P	.48
Q	.50
R	.51
S	.71
T	.83
U	.95
V	1.10
W	1.20
X	1.40
Y	1.70
Z	1.95

WIRE LEADS	
PART LENGTH	DIA. (d) (d)
.90″ ≤	.025″
.90″ >	.032″





HOW TO ORDER

Example: MPC2 1323F100

MPC2	1323	F	100
Metallized Polycarbonate Axial - Wrap and Fill	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 100 200 400 600

MPC2R

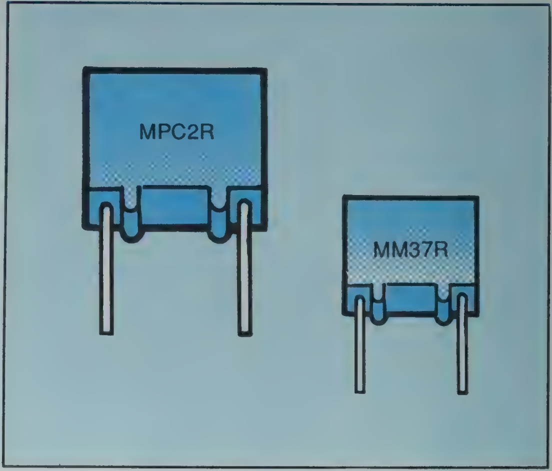
Metallized Polycarbonate Radial Lead

INTRODUCTION:

The MPC2R series features metallized polycarbonate in a radial leaded package. Ideal for blocking, coupling, decoupling and D.C. filter applications, or where high stability is required.

FEATURES:

- Positive temperature coefficient
- Self-healing characteristics
- Excellent reliability
- Good moisture resistance
- Excellent long term stability
- Excellent temperature stability



SPECIFICATIONS:

Dielectric - Metallized Polycarbonate

Leads - Copper Clad Steel

Encapsulation - Molded valox capsule with epoxy end fill

Lead Contact - Lead welded to end spray

Packaging - Bulk pack, auto insertable upon request

Capacitance Tolerances - Available from standard production tolerances are of; ±10%, ±5%, ±2%, ±1%. Special tolerances upon request.

Rated Voltages - 50 VDC/25 VAC
100 VDC/50 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 1.5X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body.

Storage Temperature - -55°C through +125°C

Operating Temperature Range - -55°C through +125°C.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 7°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 50K meg measured at 23°C ±3° and 100 VDC after 1 minute for values less than or equal to .5μf.

Time Constant - For values greater than .5μf the minimum value is 25,000 seconds.

Temperature Coefficient - +150 ±100 × 10^6/°C.

Voltage Rise Time - 5V/micro sec

Maximum Current - .5 amp RMS, 1 amp max. peak

Long Term Storage Capacitance Stability - 5 years at 1%

Long Term Operational Capacitance Stability - 5 years at 2%

Self-Inductance - Equal to or less than 20 nano henries

Dissipation Factor - (Typical x 3 = maximum)

Frequency	1000pf thru 1.0mf	1mf thru 4.7mf
1KHZ	.1%	.15%

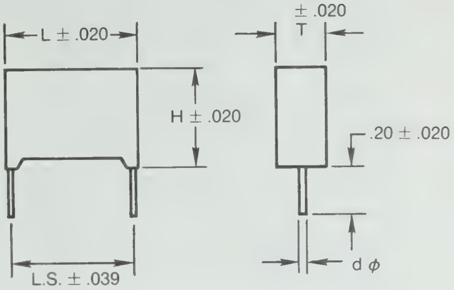
Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .1% maximum.

Dimensions

Capacitance (MFD)	Rated Voltage 50V	100V	200V	400V	600V
	Case Codes* (Dia. x Length)				
.001	B	B	B	B	B
.0012	B	B	B	B	B
.0015	B	B	B	B	B
.0018	B	B	B	B	B
.0022	B	B	B	B	B
.0033	B	B	B	B	D
.0039	B	B	B	B	D
.0047	B	B	B	C	D
.0056	B	B	B	D	E
.0068	B	B	B	D	E
.0082	B	B	B	D	E
.01	B	B	B	D	E
.012	B	B	B	E	E
.015	B	B	B	E	F
.018	B	C	C	E	F
.022	B	C	C	F	G
.027	B	C	D	F	G
.033	B	C	D	G	H
.039	B	C	D	G	H
.047	B	D	E	H	I
.056	B	D	E	H	I
.068	B	D	F	I	I
.082	B	E	F	I	L
.1	B	E	F	I	
.12	B	E	F	I	
.15	C	E	G	L	
.18	D	F	H		
.22	D	F	H		
.33	D	G	I		
.39	E	G	I		
.47	E	H	L		
.56	F	I	L		
.68	F	I			
.82	F	I			
1.0	G	L			
1.5	H				
2.0	I				

*Case Codes

Case Code	L	T	H	LS	d
B	.42	.16	.33	.30	22
C	.42	.18	.33	.30	22
D	.55	.18	.33	.40	22
E	.55	.24	.40	.40	22
F	.55	.30	.46	.40	22
G	.67	.30	.46	.50	22
H	.82	.30	.46	.60	22
I	.82	.40	.58	.60	22
L	1.04	.40	.58	.80	22



HOW TO ORDER

Example: MPC2R 1323F100

MPC2R

Metallized Polycarbonate Radial Lead

1323

Capacitance in Picofarads
List all significant digits with last digit indicating number of zeros to follow.

132,000pfd or .132mfd

F

Tolerance
- D - ±0.5%
- F - ±1%
- G - ±2%
- H - ±2.5%
- J - ±5%
- K - ±10%
- M - ±20%

100

Voltage (VDC)
- 50
- 100
- 200
- 400
- 600

PS14S

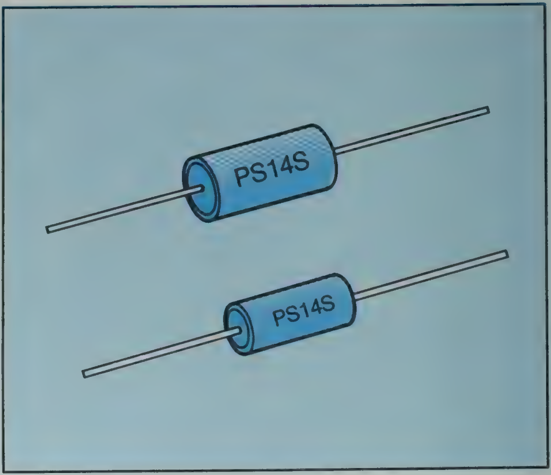
Polystyrene - Axial Encapsulated

INTRODUCTION:

This capacitor is constructed with polystyrene dielectric and extended foil. It is epoxy sealed in a molded plastic case.

FEATURES:

- Flame retardant capsulse
- Extremely stable with changes in temperature, frequency or voltage.
- Very good operation at high frequencies.
- Low series resistance.
- Low self inductance.
- Tape and reel available.



SPECIFICATIONS:

Dielectric - Polystyrene

Electrodes - Aluminum Foil

Leads - Copper Clad Steel

Encapsulation - Blue molded valox capsule with epoxy end fill

Lead Contact - Pigtail lead welded to extended foils

Packaging - Bulk pack, tape and reel upon request

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2.5%, ±2%, ±1%, ±0.5. Special tolerances upon request.

Rated Voltages - 100 VDC/63 VAC
200 VDC/100 VAC
400 VDC/160 VAC

Dielectric Strength or Test Voltage - 2.0X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body.

Operating Temperature Range - -40°C through 70°C.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 3°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 100K meg measured at 23°C ±3° and 100 VDC after 1 minute.

Temperature Coefficient - -125 ±75 × 10^6/°C.

Voltage Rise Time - 500V/micro sec

Maximum Current - 1 amp RMS, 2 amp max. peak

Long Term Storage Capacitance Stability -
5 years at .2%

Long Term Operations Capacitance Stability -
5 years at .5%

Self-Inductance - Equal to or less than 20 nano henries

Dissipation Factor - (Typical x 3 = maximum)

Frequency	4700pf thru .033mf	.003mf thru .1mf	.1mf thru .47mf
1KHZ	.02%	.02%	.03%
10KHZ	.03%	.03%	X

Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .02% maximum.

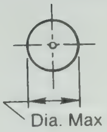
Dimensions

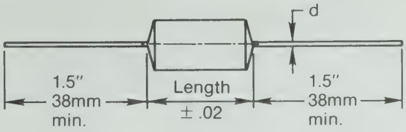
Capacitance (MFD)	Rated Voltage 100V	 200V	 400V
	Case Codes* (Dia. x Length)		
.0001			A x F
.001			A x F
.0015			A x F
.0022		A x F	A x G
.0033	A x F	A x F	B x G
.0039	A x F	A x F	B x G
.0047	A x F	B x G	B x G
.0056	A x F	B x G	B x G
.0068	A x F	B x G	B x G
.0082	B x G	B x G	B x G
.01	B x G	B x G	B x J
.012	B x G	B x J	B x J
.015	B x G	B x J	C x J
.018	B x G	C x J	C x J
.022	B x J	C x J	E x J
.027	B x J	E x J	E x J
.033	C x J	E x J	E x K
.039	C x J	E x J	E x K
.047	C x J	E x K	E x K
.056	E x J	E x K	G x K
.068	E x J	E x K	G x K
.082	E x K	E x K	
.1	E x K	E x K	
.12	E x K	G x K	
.15	E x K	G x K	
.18	G x K		
.22	G x K		
.27	G x K		
.33	I x K		

*Case Codes

Case Code	Dim. (in.)
A	.25
B	.32
C	.38
D	.40
E	.44
F	.51
G	.56
H	.59
I	.63
J	.75
K	1.0

WIRE LEADS	
PART LENGTH	DIA. (d)
1.0″ ≤	.025″
1.0″ >	.032″





HOW TO ORDER

Example: PS14S 1323F100

PS14S	1323	F	100
Polystyrene - Axial Encapsulated	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 100 200 400 600

PS14

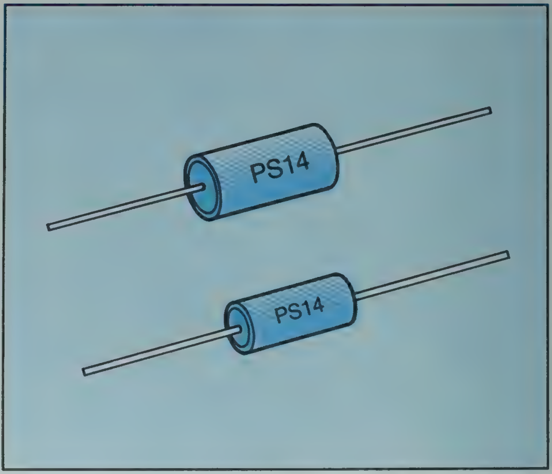
Polystyrene - Axial
Wrap and Fill

INTRODUCTION:

This capacitor is constructed with polystyrene dielectric and extended foil. It has a polyester outer wrap and epoxy end seal.

FEATURES:

- Extremely stable with changes in temperature, frequency or voltage.
- Very good operation at high frequencies.
- Low series resistance.
- Low self inductance.
- Tape and reel available.



SPECIFICATIONS:

Dielectric - Polystyrene

Electrodes - Aluminum Foil

Leads - Copper Clad Steel

Encapsulation - Polyester tape wrap with blue epoxy end fill

Lead Contact - Pigtail lead welded to extended foils

Packaging - Bulk pack, tape and reel upon request

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2.5%, ±2%, ±1%, ±0.5. Special tolerances upon request.

Rated Voltages - 100 VDC/63 VAC
200 VDC/100 VAC
400 VDC/160 VAC

Dielectric Strength or Test Voltage - 2.0X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body.

Operating Temperature Range - -40°C through 70°C.

Case Temperature Rise Above Ambient - Case temperature for capacitor must not exceed 3°C temperature rise above ambient air temperature for high current applications.

Insulation Resistance - 100K meg measured at 23°C ±3° and 100 VDC after 1 minute.

Temperature Coefficient - -125 ±75 × 10^6/°C.

Voltage Rise Time - 500V/micro sec

Maximum Current - 1 amp RMS, 2 amp max. peak

Long Term Storage Capacitance Stability - 5 years at .2%

Long Term Operations Capacitance Stability - 5 years at .5%

Self-Inductance - Equal to or less than 20 nano henries

Dissipation Factor - (Typical x 3 = maximum)

Frequency	4700pf thru .033mf	.003mf thru .1mf	.1mf thru .47mf
1KHZ	.02%	.02%	.03%
10KHZ	.03%	.03%	X

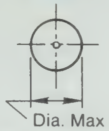
Dielectric Absorption - When tested per the alternate procedure for MIL-C-19978D, the recovery voltage resulting from dielectric absorption will be less than .02% maximum.

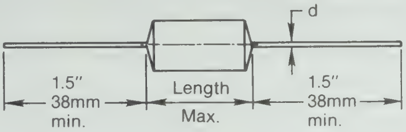
Capacitance (MFD)	Rated Voltage 100V	 200V	 400V
	Case Codes* (Dia. x Length)		
.001			A x T
.0015			B x T
.0018			B x T
.0022			B x T
.0027			B x U
.0033		B x T	C x U
.0039		B x T	E x U
.0047		D x T	E x U
.0056	B x T	E x T	F x U
.0068	C x T	E x T	G x U
.0082	C x T	F x U	H x U
.01	D x U	G x U	I x U
.012	E x U	H x U	J x U
.015	G x U	J x U	J x V
.018	G x U	K x U	K x V
.022	H x U	I x V	M x V
.027	I x U	L x V	N x V
.033	K x U	N x V	L x W
.039	J x V	O x V	N x W
.047	K x V	P x V	P x W
.056	L x V	Q x V	R x X
.068	M x V	O x W	R x X
.082	I x W	P x W	S x X
.1	K x W	R x W	S x X
.12	M x W	T x W	
.15	O x W	U x X	
.18	Q x X	U x X	
.22	S x X	U x Y	
.27	T x X	V x Y	
.33	U x Y	V x Y	
.39	V x Y		
.47	V x Y		
.56	V x Y		

*Case Codes

Case Code	Dim. (in.)
A	.20
B	.22
C	.23
D	.24
E	.25
F	.26
G	.28
H	.29
I	.32
J	.33
K	.35
L	.36
M	.37
N	.38
O	.40
P	.42
Q	.44
R	.46
S	.50
T	.51
U	.59
V	.71
W	.82
X	.95
Y	1.05

WIRE LEADS	
PART LENGTH	DIA. (d)
1.0″ ≤	.025″
1.0″ >	.032″





HOW TO ORDER

Example: PS14 1323F100

PS14	**1323**	**F**	**100**
Polystyrene - Axial Wrap and Fill	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 100 200 400 600

MM37

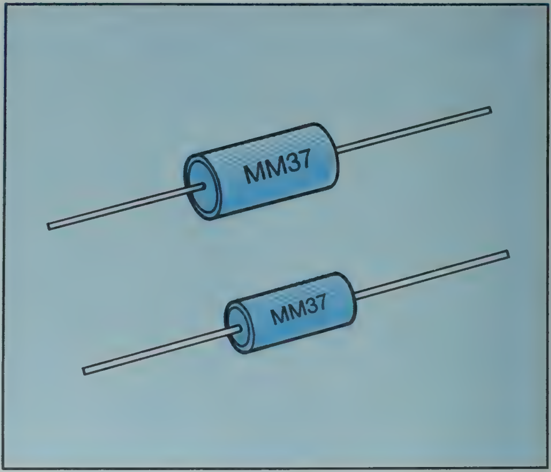
Metallized Polyester Axial - Wrap and Fill

INTRODUCTION:

The MM37 series capacitors feature metallized polyester in a wrap and fill construction. These capacitors are ideal for general purpose applications and will have a smaller dimension than our other series.

FEATURES:

- Self-healing characteristics
- High dielectric strength
- Good for DC line filters, decoupling and bypass applications
- High moisture resistance
- With high dielectric constant, this series is ideal for high capacitance value in small dimensions
- Tape and reel available



SPECIFICATIONS:

Dielectric - Metallized Polyester Film

Leads - Copper Clad Steel

Encapsulation - Polyester tape wrap with epoxy end fill.

Packaging - Bulk pack or tape and reel upon request.

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2%, ±1%. Special tolerances upon request.

Rated Voltages - 50 VDC/25 VAC
100 VDC/50 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 1.5X rated voltage at 1 min. Special test upon request.

Lead Pull Test - 4.5# applied along axis of body for 1 minute.

Operating Temperature Range - -40°C through +105°C.

Insulation Resistance - 50 - 100 V = 10,000 meg/mfd at 25°C not to exceed 40,000 megohms.

200 V = 25,000 meg/mfd at 25°C not to exceed 60,000 megohms.

Temperature Coefficient - +550 ±150/ppm.

Dissipation Factor - .1%.

STK can custom manufacture non-standard capacitance values and package designs from 100 pf to 10 mfd. Contact STK for details.

STK

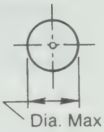
Dimensions

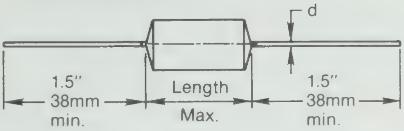
Capacitance (MFD)	Rated Voltage 50V	100V	200V	400V	600V
	Case Codes* (Dia. x Length)				
.001	A x L	A x L	A x L	A x L	A x L
.0012	A x L	A x L	A x L	A x L	A x L
.0015	A x L	A x L	A x L	A x L	A x L
.0018	A x L	A x L	A x L	A x L	A x L
.0022	A x L	A x L	A x L	A x L	A x L
.0027	A x L	A x L	A x L	A x L	A x M
.0033	A x L	A x L	A x L	A x L	A x M
.0047	A x L	A x L	A x L	A x L	A x M
.0056	A x L	A x L	A x L	A x L	A x M
.0082	A x L	A x L	A x L	A x L	B x M
.01	A x L	A x L	A x L	B x L	C x M
.012	A x L	A x L	A x L	A x M	D x M
.015	A x L	A x L	A x L	A x M	F x M
.018	A x L	A x L	A x L	B x M	G x M
.022	A x L	A x L	B x L	B x M	H x M
.027	A x L	A x L	A x M	C x M	I x M
.033	A x L	A x L	B x M	D x M	E x P
.039	A x L	A x L	B x M	E x M	G x P
.047	A x L	B x L	C x M	F x M	H x P
.056	A x L	B x L	C x M	G x M	I x P
.082	A x L	A x M	D x M	H x P	I x R
.10	B x L	B x M	F x M	I x P	J x R
.12	B x L	C x M	G x M	J x P	K x R
.15	C x L	D x M	F x P	H x R	J x T
.18	A x M	E x M	G x P	I x R	K x T
.22	A x M	F x M	H x P	J x R	K x X
.27	B x M	E x P	F x R	K x R	L x X
.33	C x M	F x P	G x R	J x W	M x X
.39	C x M	G x P	H x R	K x W	N x X
.47	E x M	H x P	I x R	L x W	O x X
.56	E x P	G x P	J x R	L x X	P x X
.68	F x P	H x R	I x W	M x X	O x Y
.82	G x P	I x R	J x W	N x X	P x Y
1.0	H x P	J x R	K x W	O x X	Q x Y
2.0	I x R	L x W	N x X	R x Y	U x Z
3.0	K x R	M x X	P x X	V x Y	W x X
4.0	K x W	M x Y	Q x Y	T x Z	X x Z
5.0	L x W	O x Y	R x Y	V x Z	

*Case Codes

Case Code	Dim. (in.)
A	.18
B	.20
C	.22
D	.24
E	.26
F	.28
G	.30
H	.32
I	.36
J	.40
K	.44
L	.48
M	.52
N	.56
O	.61
P	.66
Q	.70
R	.78
S	.83
T	.91
U	.94
V	.96
W	1.05
X	1.20
Y	1.68
Z	1.98

WIRE LEADS	
PART LENGTH	DIA. (d)
.90″ ≤	.025″
.90″ >	.032″





HOW TO ORDER

Example: MM37 1323F100

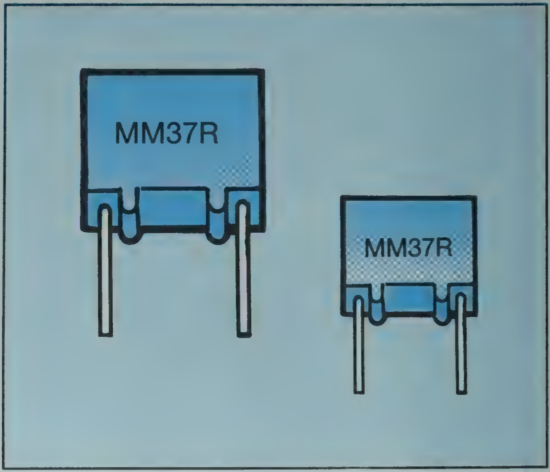
MM37	**1323**	**F**	**100**
Metallized Polyester Axial - Wrap and Fill	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 50 100 200 400 600

MM37R

Metallized Polyester
Radial Lead

INTRODUCTION:

The MM37R series features a radial leaded package with metallized polyester film dielectric. They are encapsulated in a plastic case with epoxy seal. Designed for general purpose applications.



FEATURES:

- Flame retardant capsule
- Self-healing characteristics
- High moisture resistance
- Ideal for blocking, coupling, decoupling filters and timing circuits
- Good temperature stability

SPECIFICATIONS:

Dielectric - Metallized Polyester

Electrodes - Aluminum Foil

Leads - Copper Clad Steel

Encapsulation - Flame retardant premolded plastic case.

Capacitance Range - .001 mfd to 5.0 mfd.

Capacitance Tolerances - Available from standard production are tolerances of; ±10%, ±5%, ±2.5%, ±1%, ±.5%. Special tolerances upon request.

Rated Voltages - 100 VDC/50 VAC
200 VDC/100 VAC
400 VDC/160 VAC
600 VDC/200 VAC

Dielectric Strength or Test Voltage - 1.5X rated voltage for 1 min. Special test upon request.

Lead Pull Test - 5 lbs. for one minute.

Operating Temperature Range - -55°C through +85°C.

Insulation Resistance - -100 VDC at 25°C 10,000 MEG/MFD, not to exceed 40,000 megohms.

200 VDC - 600 VDC at 25°C 25,000 MEG/MFD, not to exceed 60,000 megohms.

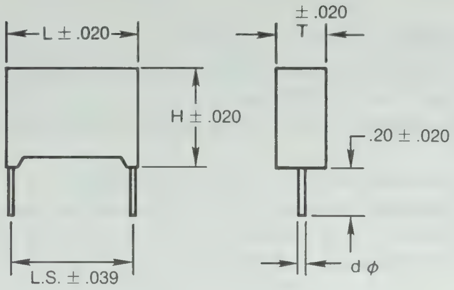
Temperature Coefficient - +550 ±150/ppm.

Dissipation Factor - .1%

Dimensions

Capacitance (MFD)	Rated Voltage 100V	200V	400V	600V
	Case Codes * (Dia. x Length)			
.001	A	A	A	B
.01	A	A	A	B
.012	A	A	A	C
.015	A	A	B	C
.018	A	A	B	D
.022	A	A	B	D
.027	A	A	B	E
.033	A	A	C	E
.039	A	B	C	F
.047	A	B	C	F
.056	A	B	D	G
.068	A	B	D	G
.082	A	C	E	H
.10	B	C	E	I
.12	B	C	F	I
.15	B	D	G	J
.18	C	D	G	K
.22	C	E	I	K
.27	C	E	I	L
.33	D	F	J	M
.39	D	F	J	M
.47	E	G	K	N
.56	F	G	L	N
.68	F	I	L	
.82	G	J	M	
1.0	G	K	M	
2.2	K	M		
3.3	L	N		
4.7	M			
6.8	M			

CASE CODE	L	H	T	LS	d
A	.41	.31	.16	.3	.22
B	.51	.35	.16	.4	.22
C	.51	.43	.20	.4	.22
D	.51	.47	.24	.4	.22
E	.71	.43	.20	.6	.22
F	.71	.47	.24	.6	.22
G	.71	.53	.30	.6	.22
H	.71	.57	.34	.6	.22
I	1.04	.60	.24	.90	.22
J	1.04	.63	.28	.90	.22
K	1.04	.69	.34	.90	.22
L	1.04	.75	.40	.90	.22
M	1.24	.79	.44	1.10	.24
N	1.24	.87	.51	1.10	.24



HOW TO ORDER

Example: MM37R 1323F100

MM37R	1323	F	100
Metallized Polyester Radial Lead	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** D - ±0.5% F - ±1% G - ±2% H - ±2.5% J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 100 200 400 600

MM35R

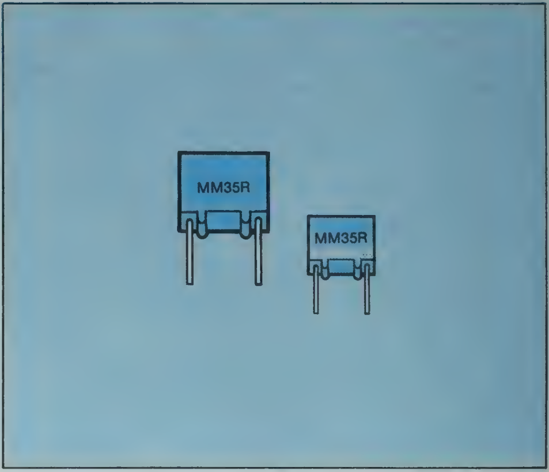
Metalized Polyester
Radial Lead

INTRODUCTION:

The MM35R series features a radial leaded package with metallized polyester film dielectric. They are encapsulated in a plastic case with epoxy seal. Designed for general purpose applications.

FEATURES:

- .2" lead spacing
- Flame retardant capsule
- Self-healing characteristics
- High moisture resistance
- Ideal for blocking, coupling, decoupling filters and timing circuits
- Good temperature stability



SPECIFICATIONS:

Dielectric - Metallized Polyester

Electrodes - Aluminum Deposited by Evaporation

Leads - Copper Clad Steel

Encapsulation - Flame Retardant Premolded Plastic Case

Capacitance Range - .001 mfd to 1.0 mfd.

Capacitance Tolerances - Available from standard production are tolerances of: ±20%, ±10%, ±5%.

Rated Voltages - 50 VDC/25 VAC
63 VDC/35 VAC
100 VDC/50 VAC

Life Test - 1000 hours at 85°C with 1.25 times rated D.C. voltage.

D.F. Increase ≤ 0.50 at 10KHz
I.R. Increase ≤ 50% of initial value

Dielectric Strength or Test Voltage - 1.6X rated voltage for 1 minute.

Lead Pull Test - 5 lbs. for 1 minute.

Operating Temperature Range - -55°C through +85°C.

Insulation Resistance - Measured at a temperature of 25°C ±5°C after applying for 60 seconds a voltage of:

10 VDC for rated voltages < 100 VDC
100 VDC for rated voltages ≥ 100 VDC

≥ 10,000 M Ω for C ≤ .1 uF.
≥ 1,000 M Ω x uF for C > .1 uF.

Temperature Coefficient - +550 +150/ppm.

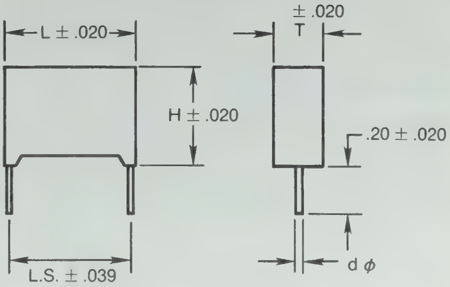
Dissipation Factor - 1% at 1 KHz.

STK

DIMENSIONS

Capacitance (MFD)	Rated Voltage		
	50V	63V	100V
	Case Codes * (Dia. x Length)		
.001			A
.0022			A
.0047			A
.0068			A
.01			A
.012			A
.015			A
.018			A
.022			A
.027			A
.033			A
.039			A
.047		A	B
.068		A	D
.10	A	B	E
.15	B	C	F
.22	C	C	G
.33	C	E	
.47	E	F	
.68	F	G	
1.0	G		

CASE CODE	L	H	T	LS
A	.283	.256	.098	.197
B	.283	.256	.118	.197
C	.283	.295	.138	.197
D	.283	.335	.138	.197
E	.283	.374	.177	.197
F	.283	.394	.197	.197
G	.283	.433	.236	.197



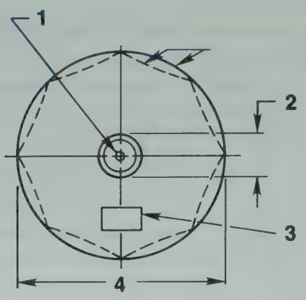
d ø = .024

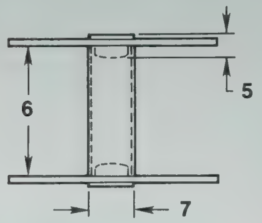
HOW TO ORDER

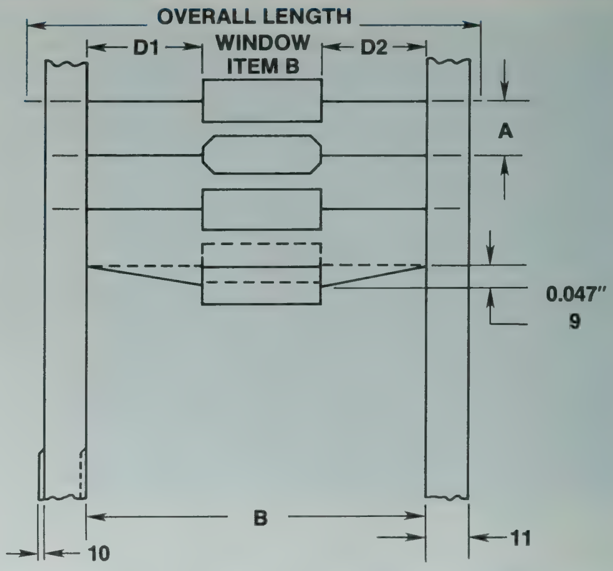
Example: MM35R 1323F100

MM35R	1323	F	100
Metalized Polyester Radial Lead	**Capacitance in Picofarads** List all significant digits with last digit indicating number of zeros to follow. 132,000pfd or .132mfd	**Tolerance** J - ±5% K - ±10% M - ±20%	**Voltage (VDC)** 50 63 100

Tape & Reel Specifications Sheet Axial Leaded Components







INTRODUCTION

This tape and reel specification is intended to facilitate the use of readily available standard components. Compliance to this process specification should not require the vendor's modification, if conformed to EIA standard RS-296D.

Item # Description/Specification

1. Arbor Hole Diameter / .640" ± .025"
2. Hub Recess / 3.0" ± .05"
3. Minimum reel and carton marking will correspond to individual customer specification.
4. Reel Diameter = 14.0"
5. Recess Depth / .5" minimum
6. Item 5 reel width shall be .125" to .250" greater than the overall length of the taped component.
7. Core Diameter / 3.25" ± .1"
8. A window which is equal to the maximum component body length shall be centered between lead tapes such that the difference between D1 and D2 does not exceed .055".
9. Leads shall not be bent more than .047" from their normal position when measured from the edge of the component lead at the inside tape edge and at its connection to the body of the component.

Component Body Dia.	Dimension "A" Unless Noted Item 12	Inside Tape Spacing Dimension "B" Item 13 Stand. Class II	Class III
.180" to .394"	.395" ± .015"	2.500 ± .063	
.394" to .591"	.591" ± .015"		2.875 ± .063

10. Exposed adhesive shall be no greater than .031".
11. Component leads shall be perpendicularly positioned between pairs of .197" to .250" tape and held without any relative motion to the tape.
12. Accumulative pitch tolerance dimension "A" shall not exceed 0.059" over six consecutive components.
13. Inside tape spacing will be determined by the input class of each individual component as called for by customers drawing and/or purchase order.

Other notes: (optional)

- All outside foil components will be oriented in one direction.
- A length of leader tape shall be provided before the first and after the last component of the reel. It will be a minimum of 12.0".

Film Dielectric Comparisons

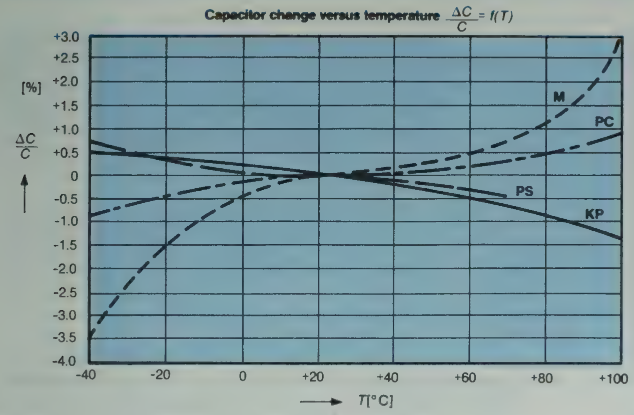


Figure A

Film Dielectric Comparisons. Polypropylene (KP) film and aluminum foil capacitors have several important advantages when compared to polyester (M), polycarbonate (PC), and polystyrene (PS). The following explanation, illustrated by accompanying graphs, show polypropylene to exhibit superior capacitance stability with temperature and frequency, dissipation factor with temperature and frequency, and time constant with temperature.

The first graph, capacitance change versus temperature variation, shows typical parametric changes for polyester, polycarbonate, polystyrene, and polypropylene. Note the polypropylene dielectric is most stable through the entire temperature range, (see Fig. A).

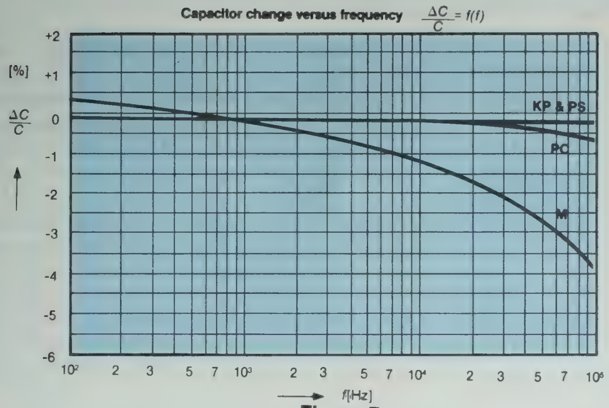


Figure B

The above shows polystyrene to be a very stable dielectric, but with a limited temperature range on the higher end of the temperature scale. This limitation is the chief disadvantage of the polystyrene construction as such capacitors may be destroyed or damaged with a wave soldering process. In most instances polystyrene dielectric has been displaced by polypropylene.

Observation of capacitance change versus frequency in Fig. B shows polypropylene to be much more stable than polyester and polycarbonate.

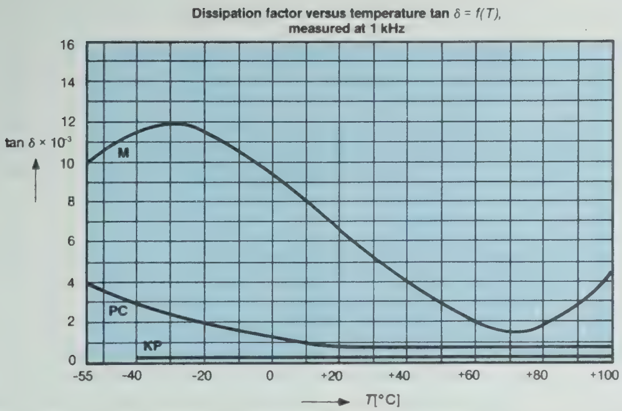


Figure C

Even though the above graph goes only to 100,000 hertz, it should be stated the capabilities of polypropylene go into the mega hertz range.

Although dissipation factor is a function of ambient temperature and frequency, the graphs in Fig. C and Fig. D demonstrate the predominance of polypropylene with regard to quality.

Film Dielectric Comparisons

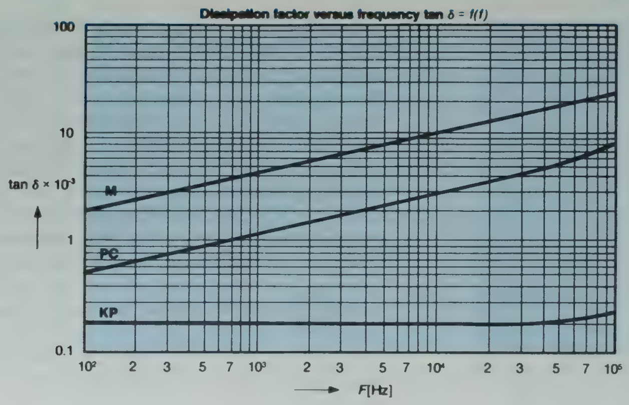


Figure D

Since dielectric resistance is subject to change with temperature and quantity, the time constant is a product of *IR* and cap value, the graphs in Fig. E point out the improved insulation resistance of polypropylene as compared to the other dielectrics.

Time constant versus temperature *r = f(T)*

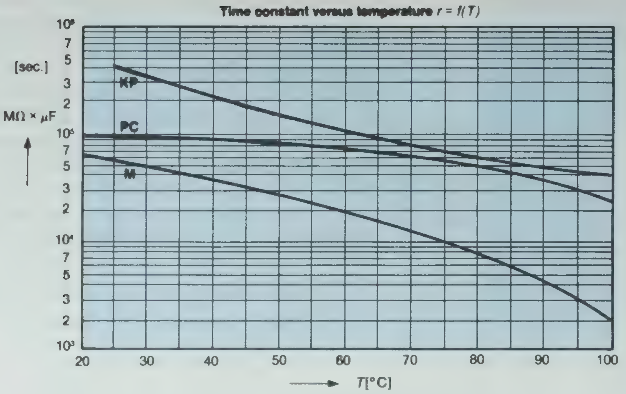


Figure E

Therefore, a given capacitance value using polypropylene has a vast improvement when compared to polyester and polycarbonate.

Terms and Definitions

The Ambient Temperature is a temperature of the air in the immediate vicinity of the capacitor. Meaningful readings can be obtained only after certain time has elapsed to allow the circuit temperatures to be stabilized following power and/or signal application.

Operating Temperature Range is limited by the minimum and maximum ambient temperatures at which capacitor can be safely operated. See specifications.

Rated Voltage, as shown in specifications, indicates maximum direct voltage and RMS alternating voltage which may be safely and continuously applied to the terminals of the capacitor provided operating temperature limits are observed.

Test Voltage. Voltage applied which may be applied for short durations such as 50 seconds. For film/foil normally the test voltage is two times rated voltage to insure quality level of capacitor adequate to meet normal conditions. For metallized capacitors the test voltage is normally 1.5X rated voltage.

Superimposed AC Voltage is a load characteristic when alternating (sinusoidal) voltage is present in addition to the direct (constant) voltage. The specified working voltage of the capacitor shall not be exceeded by the sum of the direct voltage and the peak alternating voltage. At no time may the maximum AC voltage rating be exceeded by an alternating voltage (AC).

Pulse load is predominantly a direct voltage load of a finite duration applied singly or repeatedly and has fast rising and falling edges (ramps), that is—it does not conform to the sinusoidal curve. As defined above, such load may be applied to the capacitors, provided magnitude of the pulse voltage and the voltage rise time are within the specified limits.

The pulse load may be superimposed upon the direct voltage if sum of (vectors of) pulse and direct voltages does not exceed specified capacitor rating.

Dielectric Constant. The numerical value of a comparative increase in capacitance gained by the introduction of an insulator (the dielectric) as a replacement for the air space separating the electrode plates of the reference (air-insulated) capacitor is referred to as a specific constant of the particular insulating material. The dielectric constant is always positive and greater than unity.

Table 1

Dielectric	Dielectric Constant	Puncture Volts per 0.001″ (mil)
Air (Norm)	Unity (1.0)	19.8 - 22.8
Cellulose Acetate	6.0 - 8.0	300.0 - 1,000.0
Glass, window	7.6 - 8.0	200.0 - 250.0
Mica	2.5 - 8.0	
Mica, clear Indian	6.4 - 7.5	600 - 1,500
Polyethelyne	2.3 - 2.4	1,000
Polystyrene	2.4 - 2.9	1,500 - 2,500
Polycarbonate	2.6 - 2.8	2,000 - 4,000
Polypropylene	2.2 - 2.8	3,000 - 6,000
Polyester (Mylar)	3.11 - 3.4	3,000 - 6,000

Insulation Resistance is the ratio of applied direct voltage to the leakage current, which is flowing through the dielectric, representing the loss (dissipation) of applied power

$$R_i = \frac{V_c}{I_d}\ ; \quad \text{(ohm's law)}$$

When R_i is insulation (dielectric) resistance
V_c is applied (charging) voltage
I_d is current of dissipation (leakage)

Insulation resistance is a function of ambient temperature and voltage. Usually R_i is several thousand megohms per 0.100″ (mil) insulation (dielectric) thickness; determined under conditions specified.

The Discharging Time Constant of capacitor is subject to the same formula as a conventional RC network ($T = RC$); where both components are a part of the equivalent parallel circuit made of the insulation resistance and capacitance. Therefore, the discharging current of the capacitor, while time (seconds) is observed, is the leakage through the dielectric. Discharging time constant = MΩ × μF. Since dielectric resistance (hence the leakage current) is subject to change with temperature changes, the discharging time constant is a function of temperature.

The Dissipation Factor & Q-Factor. Capacitor can be viewed as an equivalent series circuit where equivalent series resistance (R_e) and equivalent series capacitive reactance (X_c). Both components of the equivalent series circuit limit current and both are measured in ohms. But unlike resistance, the capacitive reactance does not consume power, only the resistive component does dissipate the power by transmitting it into heat. With an alternative (sinusoidal) voltage applied to capacitor, the ratio of the increment of power dissipated by the resistive component (R_e) of the equivalent series circuit to the power utilized by the capacitive reactance (X_c) is called dissipation factor, this is written as:

$$D = \frac{I^2R_e}{I^2X_c}\text{; (Power } P = I^2R\text{)}$$

Cancelling out in the above quotation value I^2, the dissipation factor (D) will be:

$$D = \frac{R_e}{X_c}$$

The reciprocal of the dissipation factor is called quality factor (Q) or, sometimes, storage factor, all it is:

$$Q = \frac{I}{D} = \frac{X_c}{R_e}:$$

The dissipation factor and, therefore, the quality factor are functions of the ambient temperature and the frequency of applied alternating voltage. The heat generated by the dissipated power must be considered when capacitor is intended for operation at ambient temperatures close to the specified maximum rating. (Refer to Specifications.)

Self-Inductance of Capacitor. The amplitude of induced voltage is proportional to the rate of current in the conductor and the constant associated with the particular circuit. This constant is called the inductance of the circuit; the symbol is L the rate of current change increases with increase of the frequency of the AC input into capacitor, therefore inductive reactance is a function of frequency.

A capacitor has two conductors (two leads) acting inductively connected in series with windings of aluminum foil electrodes. Inductance measured with length of both leads = 0.250″ each. For value of inductance, refer to Specifications.

Reactance and Impedance, Phase Angle. Formula for capacitive reactance is:

$$X_c = \frac{1}{2\pi fC}; \qquad \text{(ohms)}$$

If frequency (f) is MHz: capacitance (C) is in μF; then impedance (X_c) will be in ohms.

Formula for inductive reactance is:

$$X_L = 2\pi f\mathrm{L}; \qquad \text{(ohms)}$$

If frequency (f) is in MHz, inductance is in micro henries then impedance (X_1) will be in ohms.

The Phase Shift. The alternating current and voltage applied to the resistor will be transmitted with a change of the amplitude, but the output will be in phase with the input. Not so with the reactive components; the output will be ninety degrees out of phase, although there will be no power loss (dissipation) — the output power will be equal to the input power.

Phase Shift

Component	Voltage	Current	Reactance Type
Capacitor	Lags	Leads	Negative (capacitive)
Inductor	Leads	Lags	Positive (inductive)
Resistor	None	None	(not reactive component)

Note: Capacitive reactance is 180° out of phase with inductive reactance.

Impedance. Circuit with capacitive or inductive reactance in series with resistor will have a total opposition effect to the flow of the alternating current at a given frequency which is called impedance.

Although resistance and reactance are measured in ohms, they cannot be added arithmetically since reactance is ninety degrees out of phase. They have to be added as vectors.

By plotting values of reactance (X) and resistance (R) as sides of a right angle triangle, the vector of impedance (Z) will correspond to the hypotenuse. This method of finding the value of the impedance can be expressed by formula:

$$Z = \sqrt{R^2 + X^2\,;} \qquad \text{(ohms)}$$

Reactance in the above formula (X) could be either capacitive (X_c) or inductive (X_L) or (X_L - X_c); when series circuit has resistance (R), capacitive reactance (X_c) and inductive resistance (X_L), the complex (compound) impedance of such circuit will be:

$$Z = \sqrt{R^2 + (X_L - X_c)^2\,;} \qquad \text{(ohms)}$$

Considering only the inductive and capacitive reactances in the above formula, the net reactance can be found by substituting numerical values of the reactances and subtracting capacitive reactance (X_c) from the inductive reactance (X_L), the result will be interpreted as follows: if $X_L > X_c$, the answer will be positive indicating that the net reactance of the circuit will be inductive (see table "Phase Shift", under "Reactance Type"). Shall $X_L < X_c$ the negative answer will indicate the net effect of the compound inductance in the circuit will be capacitive.

In a singular case when $X_L = X_c$, the $(X_L - X_c) = 0$ then $Z = R$ which indicates that the circuit is at resonance and circuit current will be greatly increased. Obviously, smaller series resistance will produce greater rise in the current.

The Phase Angle. The phase angle of the circuit can be found by:

$$\tan\theta = \frac{X}{R}$$

When reactance (X) can be any of the three: (X_L), (X_c) or the ($X_L - X_c$) = X.

Resonant Frequency of Capacitor. Series-resonant circuit* will be at resonance when $X_L = X_c$; to find resonant frequency to satisfy this condition, formulas of X_L & X_c substituted into the above equation

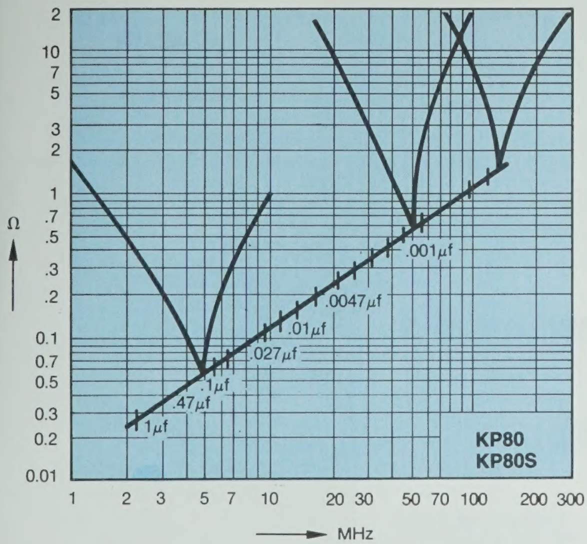
$$2\pi fL = \frac{1}{2\pi fC}$$

and solved for

$$f_R = \frac{1}{2\pi\ LC}$$

Where: f_R = Hz; L = Henries, c = Farads: or:
f_R = MHz; L = μH; c = μF

Resistance in the series-resonant circuit does not influence resonant frequency. Each individual capacitor or a group of capacitors with identical specifications will have definite inherent resonant frequency (See Fig. A). Also see "Impedance".
*Circuit where resistor, inductor & capacitor are connected in series.



The Temperature Coefficient (TC). The definition is: The ratio of percent of capacitance change, or difference of capacitance divided by the normal capacitance at two different temperatures.

Mathematically expressed, the relative capacitance change will be:

$$\frac{C_2 - C_1}{C_1} \text{ which is } \frac{\Delta C}{C};$$

Since it is a function of temperature (T), then:

$$\frac{\Delta C}{C} = f(t);$$

But the "two different temperatures" are not necessarily 1°C apart, then ($t_2 - t_1$) will represent the difference in temperature when capacitance measurements were taken and

$$TC = \frac{C_2 - C_1}{C_1\,(t_2 - t_1)};$$

Which is: if the first measurement of capacitance was at temperature (t_1) and the capacitance was found to be (C_1), the second measurement at higher temperature (t_2) and capacitance has changed to be (C_2), the, if ($C_2 < C_1$), the numerator of the expression will be negative indicating loss of capacitance, hence the negative TC and the graph will decline with progression of temperature scale; shall the ($C_2 > C_1$), the numerator will be positive indicating gain in capacitance with progressive increase in ambient temperature. The TC will be positive.

The difference in temperatures in the denominator, be it whole or a fractional number, will express the relative capacitance change per one degree Celsius.

Finally, the formula is multiplied by 10^6, the temperature coefficient will be expressing capacitance change in parts per million per one degree Celsius.

$$TC = \frac{C_2 - C_1}{C_1\,(t_2 - t_1)} \times 10^{6/°C}$$

The nominal capacitance — as specified — is a value at 20°C.

Curing is a process used to shrink the freshly wound capacitor (to shrink the dielectric film strips) at elevated temperatures for required length of time. This process does not significantly reduce the physical size of the winding, but does stabilize it against the influence of ambient temperature changes upon capacitance and the temperature coefficient TC.

Voltage Rise Time is a ratio of voltage rise per unit of time (V/μsec). The maximum value is shown in specifications. Importance of this parameter is in applications where load has a pulse wave for μsec pulse load.

Terms and Definitions

Punctures in the dielectric film. The film foil capacitors are not self-healing as are the metallized film and oil-filled types. This calls for a protection against supply voltage transients beyond the normal value. This seeming advantage of metallized capacitors is greatly offset by voltage handling capability which is illustrated by the volts per micro sec rating; typical rating for metallized film capacitors is 15-20V/micro second. Typical for film foil is 500 to 2000.

The Dielectric Absorption is a phenomenon attributed to the molecular structure of the dielectric that does not allow the energy stored in the electrostatic field to be completely given up when required; the remaining electrostatic field will slowly collapse becoming a source of residual voltage.

Capacitance Stability is expressed in terms of an anticipated irreversible change in capacitance accumulated over stated period of time at certain conditions. The rate of such gradual change, sometimes called capacitance drift, decreases over a long period of time.

The curing process (pre-aging) contributes to a great extent to reduce the capacitance change to an acceptable minimum. Particulars are given in specifications.

Contacts — Refers to the attachment of lead to the foil plates of a capacitor. Various methods of lead attachment fall into two general groups termed in the industry as "non-secure" and "secure" contacts.

Friction Contacts — where leads are inserted during winding between foil and dielectric film constitute non-secure contact. This method depends entirely upon pressure of the winding to obtain a mechanical contact from lead to foil. Current carrying capabilities are limited with this method and the possibility of failure is ever present with disturbance of winding or lead.

Secure Contacts — fuse together lead and foil plate with various constructions to provide minimal and not varying resistance and, of course, are able to withstand much greater forces counteracting their separation.

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